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Details of Locomotives to be Interchangeable.

Very great advantages would further accrue to railway companies if engines were so constructed that the principal parts could be interchangeable. An engine, when not in the repairing shop, is worth so much per day to a company, which must be lost while idle for repairs. Besides, on the principal lines of railway, a considerable reduction could be made in the staff of workmen required in the repairing shops, if the parts were made interchangeable. These parts should be principally the boiler, framing and the wheels, as each of these, not only being the principal parts themselves, have the remaining portions of the engine fitted to them. By constructing engines so that they could easily be taken asunder, and the faulty parts changed for duplicates, would only necessitate the detention of the engine for a few hours in the shop. But, taking the existing class of engines, the objection which here arises is, that the boiler, wheels, axles, and framing, are so essentially made part and parcel of each other that no one portion is distinct in itself without the other.—*London Mechanics' Magazine.*

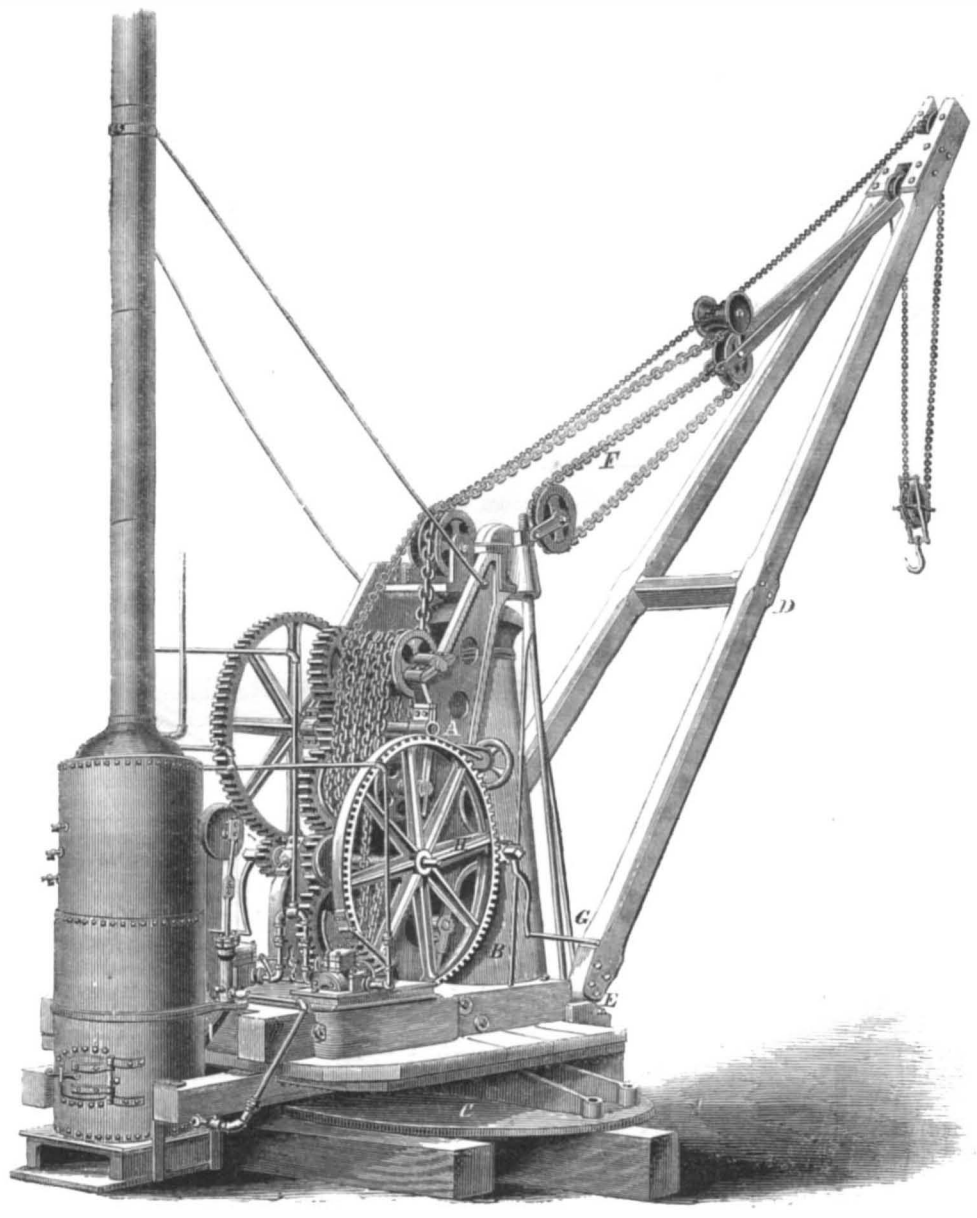
[It is stated that very many locomotives on military roads have been reconstructed in cases of exigency from half a dozen different ones. We have doubted this statement, as we also doubt whether locomotives ever could be made interchangeable, on account of the capricious and unequal wear of the brasses, peculiarities in the positions of the guides, lap of valves, length of eccentric rod to suit the same, and many other practical objections which would militate against such a system.—EDS.

American Tires for Locomotives.

The Boston *Railway Times* has an article on this subject from which we gather the information that our best American tires are better than those of foreign make. Seventy-two engines, whose tires had never been turned, averaged 34,588 miles each, and were still in good order; 190 engines averaged 38,135 miles up to the first turning. On 30 engines whose tires were worn out and removed, being mostly on heavy freight engines with 4 feet and 4½ feet wheels, the total mileage averaged 79,294 miles; 15 of these engines averaged 90,437 miles; 10 of them averaged 97,675 miles, and three of them averaged 125,572 miles.

Traveling Steam Crane.

A most complete and powerful derrick or crane, which is built at the Novelty Iron Works, New York city, by Benajah Burnett, is here illustrated. It is, as may be seen, entirely independent of horse power, being supplied with steam engines and boiler amply powerful to hoist all that the crane is capable of sustaining.



BURNETT'S TRAVELING AND STEAM CRANES.

The main support of the gearing is the framing, A, which is attached to the heavy column, B. The base of this column is at C, and the platform and all the gearing is arranged to swing around the column so as to carry the load and deposit it at any point within the radius of the boom, D. The head of the column, or the cap which revolves, runs on balls, so that the friction is reduced to the lowest point. The boom, C, is firmly jointed at the base, E, to the main framing, and the upper end or head, is lowered by running out the chains, F.

The hoisting gears are multiplied as 28 is to 1, so that the raising power of this crane is very grea for its size and weight. The dimensions of the engines shown in the illustration, are as follows:—The cylinders are oscillating three inches diameter and six inches stroke. The crane will raise the load twenty feet in the clear, and can reach twenty-five feet from the base. Engines of any desired size, with corresponding increase in the strength of the main structure can be built. Several of these machines are now in use in this city and in the West India Islands. At Matanzas, Cuba, there is one, and another in Nassau, and there are many others in different parts of the country. These cranes are made of varying capacities from 20,000 pounds to 200,000 pounds, and the weight of the smallest size is 7 tuns. When small loads are to be raised, or work is to be done for a short time only, there are winch handles, as at G, on which men can operate. By transferring the handle to the square on the large spur wheel, H, a light weight can be quickly raised, thus adapting this crane for the smallest as well as the heaviest work.

Burnett's Traveling Crane.

The machinery of this crane is very simple, and its chief recommendation is the facility with which goods can be removed from one place to another without dropping or depositing the load. The gearing, A, by which the weights are raised, is similar to that on ordinary cranes, and the hoisting chain, B, is led up over a boom, C, which is jointed at the bottom, D, so that it can be raised or lowered. The rigging, F, is composed of heavy iron bars, and is a fixture which was specially designed for handling the plates with which the frigates *Re D'Italia* and *Roanoke* were clad. One of the plates is represented lying on the rack.

The box, G, at the back, is used to counterbalance the weight to be lifted, and is supported by a strong platform springing from the base of the main column, H, which takes the strain of the lift. The boom swings around this column; the casting itself being bolted firmly to the platform of the car.

When this crane has been loaded and is ready to be transferred from the point where it is at work, to some other, the laborers apply themselves to handles, not shown in the engraving, which act on the gear, I, below the platform on the front axle. By means of

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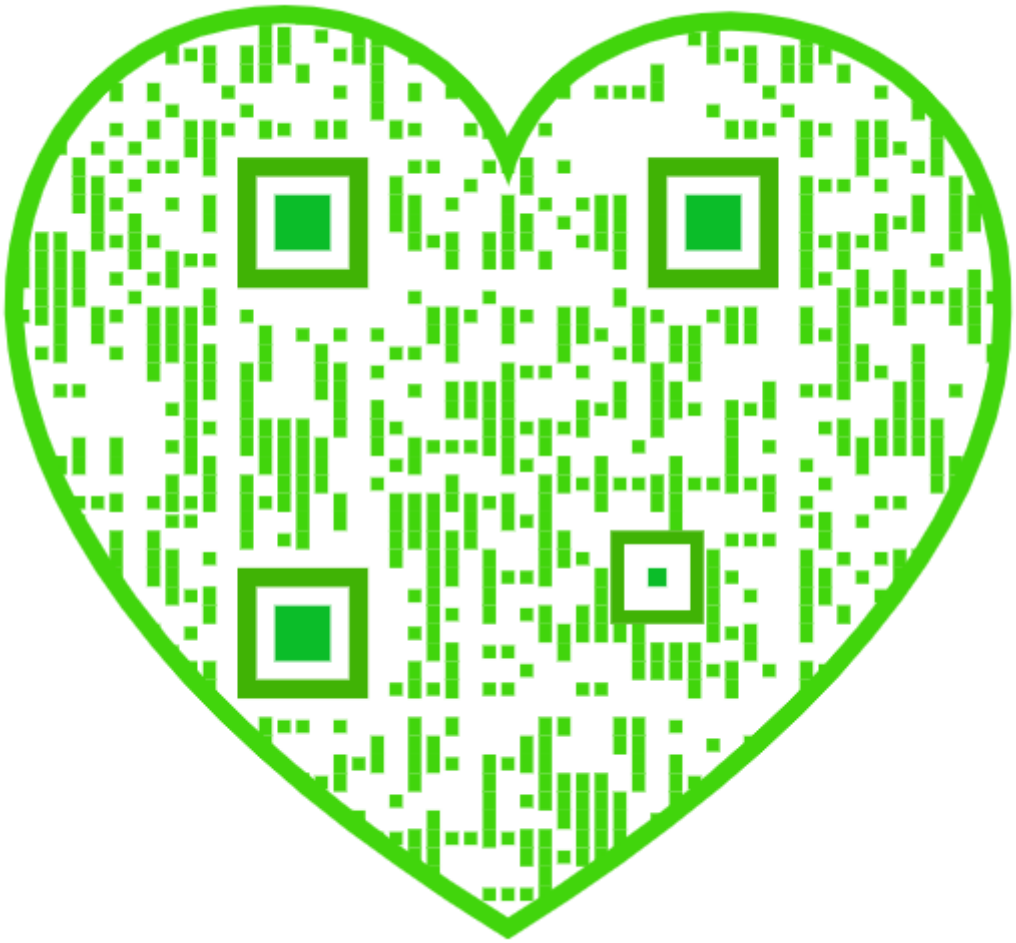
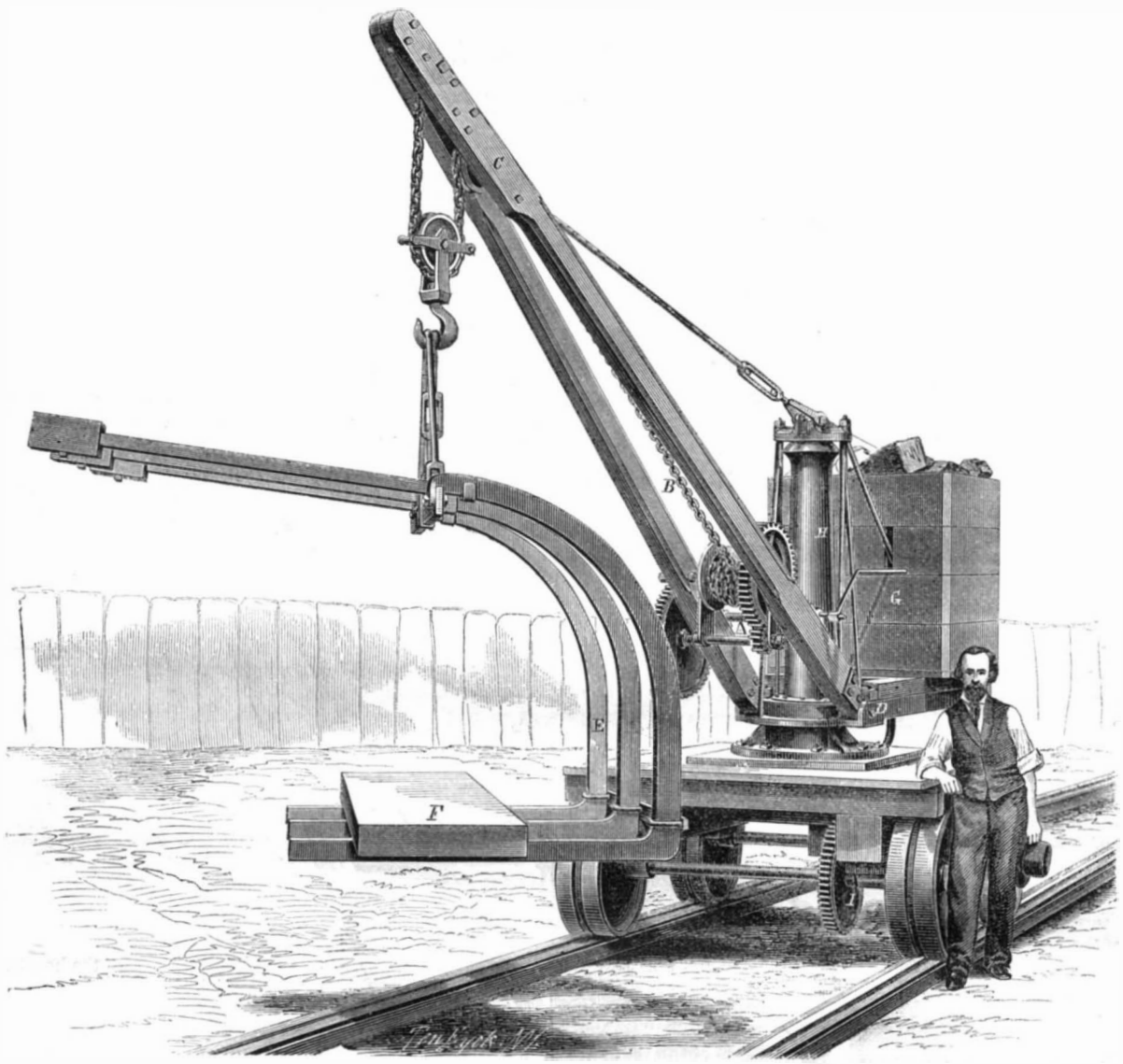


a small pinion meshing into this gear they are enabled to run the car and any weight which can be raised by the crane to any point on the track. The car wheels are made with double flanges so that they cannot possibly run off.

These cranes are in use in the West India islands, at Willet's Point, Novelty Iron Works, Continental Works, and C. H. Delamater's, and are adapted for railroad furnaces, mines, etc. Patented February 7, 1865, by Benajah T. Burnett, of Mount Vernon, N. Y. For further information apply to Davison, Stiles & Woolsey, Civil, Mining and Mechanical Engineers, 229 Broadway, who are the sole agents for the same.



BURNETT'S TRAVELING CRANE.

Life at the Oil Wells.

A writer in the New York *World*, who has just returned from Oil City, gives the following graphic and truthful sketch of life, men and manners there:—

Life in Oil City is fast and peculiar. Go into a bar-room, or a sitting-room, and you will find a conclave resembling no other ever assembled on the face of the earth. The representatives of millions of greenbacks and thousand of acres of oil land jostle in company with teamsters, stage-drivers, carpenters, workers at wells, penniless adventurers, adventurers with small capital, nabobs from afar, come to see what "all the row is about," speculators of every class, and democratic people generally. Oil is *the* great leveler. Your neighbor, no matter how wretchedly garbed or how detestably vulgar in his speech and manner, may be so far your superior in money's worth, that, in this community, where wealth is the only recognized aristocracy, he is held to be something more than a simple loafer. Men accustomed to the amenities of civilized society here descend to the plane of off-handed slang absolutely necessary to the establishment of pleasant and profitable intercourse. "Airs" are absolutely of no account whatever. A dignified bearing does not impress. The common courtesies of a business transaction may or may not be required. They will, of course, prevail between gentlemen here as everywhere. But they are not generally valued or depended upon. Men who find that, by the mere strength of their wits, they can make money here as well without a high and graceful bearing as with it, cease to respect it in others. The democratic principle adhered to in the oil business is, that all men are equal. The very trick and essence of money making is to make the man you bargain with believe that you are his inferior, and that you are permitting him to gouge you accordingly.

You have come down to look about you, with the view of purchasing some land. You casually allude to the fact loud. Lo! from the mouth of a greasy individual in the corner, who from his appearance, might, in ordinary circles, be held a coal-heaver or a roller of barrels:

"I've got a few acres up here. Perhaps you'd like to look at it?"

"How many?"

"'Bout two hundred."

"What price?"

"Thousand dollars an acre."

"I say, Bill," (up speaks one of the company to another man in a pair of worn-out boots and a frayed overcoat,) "how much did you git for that there hundred acres?"

"Sixty thousan'."

"Whew! did they look at it?"

"No!"

The oil conversation once started, soon gets into a jumble.

Not until Oil City is left behind does the full magnitude and bewilderment of the oil mining region dawn upon the traveler. The developments along the Alleghany are simply nothing to it. A perplexing maze of derricks is woven thickly along both sides of the stream, from the banks to the bases of the hills. Engine-houses, shanties, offices, tanks, groceries, taverns, embryo villages, give the whole valley an air of activity such as surrounds the machine-shops and manufactories of large cities. Smoke and steam arise; the clanking of machinery and the puffing of engines sound near and far. Sleighs and wagons fill the roads, and are drawn up beside the different wells, where the process of filling and shipping the barrels is going on. Men on horseback and men on foot—hundreds of them throng the crooked ways or linger beside the derricks. Knots of spectators gather to witness the yield of the large wells, or to discuss the prospects of new ones going down. The new wells and the old are easily distinguishable from each other at a glance, the derricks of the former being freshly hewn and white, those of the latter brown and stained with oil.

How to Count Rain Drops.

The Paris correspondent of the *Chemical News* states that M. Herve Mangon proposes to count the drops in a shower of rain in a very simple way. For this purpose he impregnates a paper screen with sulphate of iron, and faces it with a mixture of very finely-powdered nutgall and gum sandarac. Drops of water falling on this screen will make a black spot. If now the screen be placed on a drum which makes a complete revolution in twenty-four hours, successively exposing parts of the screen to the rain, the duration of the shower and the number of drops will be clearly indicated by the black spots; and the time, the space of paper exposed at each moment, and the area covered by the shower being known, the rest becomes a simple arithmetical operation. The apparatus can also be arranged to show the direction of the fall, and also, it is said, to determine the weight of the drops.

THE New Haven clock company made 226,835 movements last year, 20,000 of the number being sent to England to be put into English cases and sold to Britons.

THE Whipple File Company at Ballard Vale, Mass., make about one thousand dozen files per day by machinery.

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DEBATE ON PATENT EXTENSIONS.

The SCIENTIFIC AMERICAN has very freely discussed the subject of patent Extension by special act of Congress, and as it is a matter of considerable public interest we transfer to our columns the debate that sprung up in the House of Representatives just before the close of the last session, on the application of Delia Jacobs for the renewal of a patent for dressing treenails. Mr. Chanler of New York, who was directed by the Committee on Patents to report the bill, said :—

A treenail is a boat-nail made of locust wood, for the purpose of fastening the timbers of ships. The patent was originally granted in 1849, and expired in 1856. If required, I will have the memorial read. She failed to show by affidavit to the Commissioner of Patents that she was the administratrix of the patentee, and, under the law, failing to make that affidavit, the Commissioner refused to make the extension. The patent has not run twenty-one years yet, to which it is entitled to run. I have seen the Commissioner of Patents on the subject, and he says that he remembers the facts in the case, and that the allegations of the memorialist are true. I demand the previous question.

Mr. Washburne, of Illinois.—I hope that we will not be called upon to vote for the extension of all the patents in the country without discussion.

Mr. Chanler.—I withdraw the demand for the previous question. I am willing to answer any question, or to furnish all the information desired by gentlemen in regard to this case.

Mr. Washburne, of Illinois.—Let the memorial be read.

The memorial was read for information.

Mr. Washburne, of Illinois.—I think I understand from the memorial that this case is about this: this patent was issued in 1849, the party to whom it was issued died, and the widow sold out all her right, title, and interest, and got about a thousand dollars for it.

Mr. Chanler.—No, sir.

Mr. Wadsworth.—Seventeen hundred dollars net.

Mr. Washburne, of Illinois.—Seventeen hundred dollars net, the gentleman from Kentucky says. No application was made for a renewal of the patent, and now the widow comes here, apparently with the collusion of the party to whom the patent was assigned, to speculate out of Congress by getting a renewal.

Mr. Chanler.—The memorial sets forth that an application for a renewal was filed, and that everything was done that could be done by the party to secure an extension.

Mr. Washburne, of Illinois.—Why did they wait eight years? Now they come here and say the invention is of great value, and ask us to impose a tax upon our constituents and place the avails in the hands of the assignee. I am opposed to this class kind of legislation. Let us legislate on such matters by a general law and not by these special acts.

And again, according to the statement of the gentleman from New York he has seen the Commissioner of Patents on this matter, who has prejudged it, and if we pass this bill the patent will be renewed anyhow.

Mr. Jenckes.—This is a bill to correct an error in the office of the Commissioner of Patents. The proper evidence was on file, but it was overlooked by the Commissioner of Patents in his decision on the case; and without the action of Congress this petitioner will be without remedy.

Mr. Dawes.—I would inquire of the gentleman from New York whether the patent is still in force.

Mr. Chanler.—No, sir.

Mr. Dawes.—How long since it expired?

Mr. Chanler—In 1863.

Mr. Dawes.—I understand the patent expired in 1856, and I would inquire of the gentleman, what has been the condition of the manufacture of the article since that time? Have not parties, availing themselves of the freedom of this invention from a patent, gone into the manufacture of the article?

Mr. Chanler.—I know nothing in reference to that matter. I only know this case as presented in the memorial. I have no knowledge of the manufacture or of the trade in this article.

Mr. Dawes.—I would inquire if this bill in any way protects those who may have gone into the manufacture of the article recently, and since the patent expired?

Mr. Chanler.—I am not aware that it does.

Mr. Dawes.—I do not know what the facts are, but men may have invested their property in the manufacture of this article, free and open to everybody; and does the gentleman think it right to spring a patent upon them now?

Mr. Chanler.—I should think it was not right, and it was not my object to do that.

Mr. Dawes.—I should infer, if this was a valuable invention and worthy of a patent, that its manufacture must have been gone into during the last eight years; and if it has gone into general use, the gentleman ought, at least, to protect those now manufacturing the article.

Mr. Chanler.—It might be well to do so. My object was to do my duty in making a report according to the instructions of the committee; and I have reported the bill in the form usual in such cases. It can be amended.

Mr. Wadsworth.—I feel some regret in being compelled to state my objection to this system of extending patents upon this little bill. It is a widow's bill, apparently, and a very little bill at that. Her whole interest in it is $300, which her assignees have agreed to give her if we shall extend the monopoly seven years longer. But the bill illustrates the system. I am prepared now to exhibit the generosity of a great people toward any meritorious inventor, and to the family of any meritorious inventor, who have not reaped a reward from an invention important to mankind, sufficient to place them beyond the reach of want.

Let the meritorious inventor come to Congress, and show a proper exceptional case for his relief. But I will in no instance vote to extend a monopoly over thirty million people simply to fill the pockets of vendors and assignees and traders who have reaped the benefits of that invention. In nine cases out of ten, as in this case, the persons really interested in the extension of the patent are the assignees of the patentee; those persons who have had in their hands and reaped the benefit of the patent during the greater part of the fourteen years for which these monopolies run, while the inventor and his family have received comparatively nothing. These assignees appeal to the sympathies of members of Congress in order to procure an extension of the monopoly for seven years, and in the sacred name of widow and orphan.

Now, it is with the profoundest regret that I have seen the members of this House so generally indifferent to this thing. I am prepared to concede that the inventor ought to have a monopoly in the first instance, for some sufficient, fixed term; let it be so. But I do most cordially indorse the policy of the act of 1861. which declared that hereafter patents should be granted for seventeen years, and that there should be no extension of such patents. That is a sound policy, and now will this Congress break down the policy estabished by the act of 1861? I am very sorry that the Committee on Patents do not look at it in that way. I am sorry they do not discourage these applications, and do not propose to confine the action of Congress to the policy of 1861, denying severely the extension of patents in all cases.

Mr. Chanler.—Is the gentleman opposed to granting patents, and if not, for how long would he have them granted?

Mr. Wadsworth.—For fourteen years, under the old law; for seventeen years, under the act of 1861.

Mr. Chanler.—This patent has run only fourteen years, and the party, under the old law, is entitled to an extension of seven years. But by no fault of his the application was delayed too long. This is not an application to extend a patent beyond the time allowed by the law. It simply allows the lawful extension of the patent, which failed through the omission on the part of the paid attorney to do his duty. And the argument of the gentleman from Kentucky [Mr. WADSWORTH] amounts to this: that for the purpose of making an argument, which covers thirty-one million people, he insists that a just law shall not be carried out.

Mr. Wadsworth.—I differ with the gentleman about the law. We have no statute, and never had a statute, which, as a matter of right, gives an extension for seven years. We have simply a statute which confers on the Commissioner of Patents a discretion to extend a patent for seven years, when it shall be shown, among other things, that the inventor has not reaped a sufficient reward for his invention, by no fault of his own, during the fourteen years for which it was originally granted.

Mr. Chanler. This is exactly such a case.

Mr. Wadsworth.—The Commissioner is to extend the patent when it shall appear, among other things, that the invention is novel, useful and important, and that the inventor has not derived a sufficient reward for his time, talents, and expenditures, in perfecting the invention. It simply vests a discretion in the Commissioner, the presumption being always that the inventor has received his reward, and that his monopoly should cease. He must make out a case, and show that he has not received it, and by no fault of his. The act of 1861 is a step in advance, which I do not think the House should recede from. That act renounced the policy of extension, and made the term of the patent seventeen instead of fourteen years.

I was remarking, when interrupted by the gentleman from New York, [Mr. CHANLER,] that this policy of renewing patents is altogether vicious. Suppose the patent is a valuable one, worth millions. The Goodyear patent, for instance, in which there are millions of dollars involved. It opens a door to every sort of fraud and rascality to allow such vast private interests to haunt the rooms of the Patent Office or cumber the lobby of Congress, invade even the rooms of members, and subsidize the press, taking the names of widow and orphans in vain to procure a new lease of power over mankind.

A patent worth several million dollars can fight its way through the Department and through Congress in the face of the vital interests of the public; and as a general thing nobody wants an extension of a patent unless it is in such common use as to lay under contribution millions of people. The greater the utility of the invention the g[illegible]er the slavery to which the monopoly subjects th[illegible] the people. I do not know but that, in the [illegible]ry st[illegible] invention, some man may invent someth[illegible]hich, if he be allowed a monopoly of it for fourt[illegible]ad[illegible]ears even, may give him for that period a controlling power over mankind too great for the public safety. Suppose that a man should invent something that would wonderfully cheapen the means of subsistence beyond all hitherto achieved, that would put within the reach of everybody elegant and refined but cheap means of subsistence, what a vast power over mankind could be wielded by that inventor, under his monopoly, for fourteen years! What desperate and dangerous expedients aimed at the administrative officers and the legislative body in such cases does this thoughtless policy of extensions invite!

As is most frequently the case, the inventor, exalted or lost in the rapture of invention, becomes the victim of some scheming trader, who reaps the millions the invention produces. At the end of the term for which the patent was granted, an application is made for an extension. The poverty of the inventor, contrasted with the benefactions his genius has added to the sum of good, is pleaded before the Department and before Congress. An extension is granted and that extension inures to the benefit, not of the inventor or his widow or children, but of some person or persons who have already grown fat, by turning into commodity the necessities of mankind. The principle is wrong. It is the most wasteful and oppressive of modes for removing the poverty of the inventor. To give his widow a pittance we put mankind into circumscription, and levy millions from their necessities. Rather let us double the pittance and set free the business of mankind.

The extension of the patent in this case will probably give to the widow of the inventor about three hundred dollars. Now sir, if this invention is meritorious, and a proper remuneration for it has never been received by the inventor, but his widow and children are in poverty, let us vote the widow $1,000 and liberate from restriction the ship-building of this country. I think it much better that we should do this than grant an extension of the patent, from which the widow would derive $300, while the profits of the extension levied off the people of the country, to a large amount perhaps will go into the hands of some, it may be, mercenary assignee. In no case

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would I grant an extension of a patent after the expiration of the term of fourteen years. Yet to the benefactor of the race, or his family, destitute, notwithstanding the blessings his devotion and genius had dispensed, I would manifest, by a fitting testimonial from the Treasury, the gratitude of the people.

Mr. Jenckes.—Mr. Speaker, I wish to say a few words in reply to the position taken by the gentleman from Kentucky, [Mr. WADSWORTH.] He has, as I understand, stated distinctly in his last remarks that, under no circumstances would he agree that a patent should be extended after the expiration of the original term of fourteen years. Yet he admits that there may be made an invention for the value of which to the community the inventor cannot be remunerated by the use of that invention for fifty years.

Now, sir, let me submit a case, for which I ask the consideration of the gentleman from Kentucky, and all who are to act upon this question, and who may be called upon to act on the proposed amendment to the patent laws. Suppose that a valuable invention is patented; that at the expiration of the original term of fourteen years the inventor makes application for a renewal of the patent, under the laws that existed prior to 1861; that he makes out a perfectly just case for extension, showing that he has failed to receive proper remuneration for his invention. There are cases in which the inventor is obliged to part with his interest in the invention during the original term for a very small consideration. There may be, and there are, as we know, cases in which the inventor is unable to introduce an invention during the original term, and even during the extended term. There may be cases in which the inventor has been defrauded out of his patent for the original term. Yet he may be unable to make out at the Patent Office a case entitling him to an extension, under the law of 1836.

Gentlemen will remember that under that law the application for an extension must be made during the original term. Frequently applications have been made very near the expiration of the original term. There was, too, a very stringent provision in reference to the time within which the decision of the Commissioner should be made.

The case here presented is this: a perfect case was made before the Commissioner of Patents, the only officer under this Government having the right to grant an extension of patents. He overlooked a portion of the evidence actually on file. He has since certified that if he had had knowledge of the existence of that evidence his decision would have been different. The fact that he overlooked it is presumptive evidence that his action worked injustice. In the present state of the law there is no power, no officer under the Government, who can correct a mistake of that kind. It comes here just as a motion for a new trial would come before a court. We are the court of correction for this kind of errors. We ought to have another and a different kind, I agree, but we are that court as the law stands.

Mr. Dawes.—Mr. Speaker, I desire to put a case to the gentleman from Rhode Island to ascertain the precise position which the Commissioner of Patents takes on this point. Suppose a man parts with his property in a patent voluntarily for a consideration less than it has proved to be worth, either because he did not himself comprehend its true value, or from necessity he was compelled to part with it for a small sum, and that his assignees, deriving title from his voluntary act, have made immense fortunes out of it, I ask whether he stands in any other position than any other man who parts with his property for a less sum than that property is worth. I ask whether the Commissioner on Patents proposes to extend to the original patentee the further use and monopoly of his patent upon the ground that the patentee himself has been unable to realize a remuneration sufficient to him compared with the vast benefits to the Government, while the assignees, by his voluntary act, have reaped a rich demand.

Mr. Chanler.—I must renew the demand for the previous question.

Mr. Jenckes.—I wish to say that the question of the gentleman from Massachusetts is based on a misapprehension of the law under which a patent can be extended.

Mr. Chanler.—I renew the demand for the previous question.

Mr. Morrill moved that the bill be laid on the table.

The House divided; and there were—ayes 58, noes 38. So the bill was laid on the table.

SELF-ACTING APPARATUS FOR STEERING SHIPS.

BY J. P. JOULE, F. R. S.

[From the Mechanics' Magazine.]

At a meeting of the Institution of Engineers in Scotland, held on the 18th ult., the following paper on the above subject was read:—

Some investigations in which I have been recently engaged have led me to the construction of magnetic needles having considerably greater directive power than those in common use. It has occurred to me that it might be possiole to apply the power, thus increased, to the purpose of the automatical steering of ships. My idea is, to suspend a large compound system of needles or magnetic bars in the way first described by Professor Thomson, viz., by threads or fine wires attached above and below the system. By means of an electro-magnet relay, it would be possible to start a powerful machine in connection with the tiller whenever the ship deviates from a prescribed course.

Suppose a system to be composed of a thousand 4-inch bar magnets, each $\frac{1}{4}$ of an inch in diameter, arranged in a vertical column, say 5 in breadth and 200 in hight. According to a rough estimate I have made of the directive force of such a system, I find it to be equal, at one inch from the axis of revolution, to 300 grains, when at right angles to the magnetic meridian. This corresponds to 31 grains at 6° deflection, and 5 grains at 1°. Five grains would be amply sufficient to overcome any resistance to motion offered by a mercury commutator, and 30 grains would be more than sufficient with a properly constructed solid metallic commutator. I would have a bent wire affixed to the lower end of the system of magnetic bars, one extremity of which should be immersed in a central cup of mercury, and the other should dip in one or the other of two concentric semicircular troughs of mercury exterior to the central cup. I would place the central cup in connection with one of the poles of a voltaic battery. The other pole must be in connection with a branched conductor leading to two electro-magnets. The free wires of these electro-magnets shuold be put in connection with the semicircular troughs. By this arrangement it is obvious that accordingly as the wire carried by the magnetic system is immersed in the one or the other of the semicircular troughs, one or the other of the electro-magnets will be excited. An armature should be placed between the two electro-magnets, so as to reciprocate between them whenever the wire passes from one semicircular trough to the other. In so doing, I would have the armature suitably connected by levers, etc., to operate on easily acting valves (throttle valves for instance) placed in steam pipes proceeding from a steam boiler to opposite ends of a cylinder. A similar arrangement might be made for working the exit valves. The piston of this cylinder should be connected with the tiller in such sort that whenever the ship turns to the right, the helm will be put to port, so as to bring her back to her course.

It is obvious that if the dipping bent wire is in the direction of the magnetic axis of the compound system of magnets, and the division between the semicircular troughs is in the direction of the ship's length, the ship will be kept directed to the magnetic north. By turning the commutator in the direction of the hands of a clock, the ship will at once change to a course the same number of degrees west of north. The use of such an apparatus as I have described would of course be limited to very extraordinary circumstances. In general practice it will be impossible advantageously to displace the intellectually guided hand of the steersman, whose art consists in a great part in anticipating the motion of the ship, and, in heavy seas, in directing the ship so as to encounter them with safety.

In the discussion which followed, Professor Rankine said that from Dr. Joule's description of this contrivance it appeared to be practicable, and that it would work when executed. The shifting of the tiller by the action of the steam applied to a piston was a practice already known. The new part of this invention was the self-acting method of operating upon the valve, which regulates the admission of the steam to the cylinder. Now, although Dr. Joule had said that it keeps the vessel in a particular course in calm weather, but would require the assistance of a helmsman in rough weather, yet he believed it would turn out to act just as a skillful steersman did. The steersman in crossing a wave allows the ship to fall off a little, and then brings her up again; and that was what he thought this contrivance would do—it would allow the bow of the ship to fall off a little at one time, and bring it up at another, and would always correct the deviation. He thought that in practice it would be found to do everything that a skilful helmsman does in crossing the swell of the Atlantic. The fact was, that he had a better opinion of its practicability than Dr. Joule himself seemed to have.

Dr. Joule remarked that a great improvement might be made in the compasses of ships. In coming from Liverpool that morning by steamer, he observed the mate "tapping" the compass to get it to work. Now, he had no confidence in a compass that required tapping. He thought there was no plan equal to that Professor Thomson had introduced, having the instrument fixed at the top and bottom to a filament. With regard to the combined magnets, it was simply using a pile of bars or magnets, so as to increase the power. The bars might be circular, or flat, or otherwise; and as to the number, suppose there were five to begin with, four inches long, and half an inch asunder, they could be piled up so as to give a directive power many times as great as that of one magnet. The oscillation was nearly the same as when only using one, although the power was increased. The magnets could be continued up to any hight desired. The oscillation would be at the same speed as a light bar; but there would be power to set in motion a relay, which, communicating with the valves, would let off and on the steam.

Professor Thomson said he felt much interested in the degree of separation of the bars. In his endeavors to control the pendulum of St. George's Church clock by an electric current from the Observatory, he adopted the plan of forming a magnet of a number of bars of watchmaker's rod steel, but he did not find the directive power increased in proportion to the number of the bars; for instance, he found that a magnet composed of 69 bars did not give more than about 12 times the power of a single bar. It would be supposed that 100 bars would have 100 times the directive force of a single bar, but he found that when placed close together they demagnetized each other temporarily to a large degree, and recovered their previous magnetic strengths when separated. It thus appeared that the power depended on the distance they were placed apart, so that if they were placed on the principle adopted by Dr. Joule the power might be increased five or six fold. The advantage of separating the bars even a small distance was great; and, if circumstances permitted that they could be separated widely then the power was still further increased.

Mr. J. W. Lawrie asked how it would do to separate them two or four inches.

Dr. Joule said that depended on the length of the bars. His bars were four inches long, and separated half an inch.

The President asked how, with the method of suspension described, the magnets could be kept in a vertical plane when the ship rolled?

Dr. Joule said that he had no doubt that difficulty might be got over.

Mr. Lawrie said that if the suspending filaments were long it would be impossible to keep them quite straight. There would be a sag upon them.

The following note is appended by Dr. J. P. Joule:—I find on trial that a much smaller number of magnets than that I have given is able to work a mercurial commutator. Fifteen 4-inch bars would be amply sufficient to overcome the adhesiveness of the mercury to the wires dipping into it when the deflection is one degree. A similar observation applies to the metallic commutator. Professor Thomson, however, has shown me a far more delicate mode than either of the above. In this plan a single bar magnet is suspended by a fine platinum wire. To one arm of the magnet a platinum wire is attached vertically. Two horizontal parallel fixed wires are placed

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on either side of the suspended one. Whenever either of the fixed wires is, by the motion of the ship, brought into contact with the wire carried by the magnet, a current passes to it from the suspending wire. This current excites an electro-magnet relay, by which another current is thrown upon an electro-magnet powerful enough to work the valves of the steam cylinder. Experiments conducted in the Physical Laboratory of the University are quite conclusive as to the practicability of this plan, and demonstrate the possibility of directing a ship by the agency of a needle much less powerful than that of an ordinary compass.

CULTIVATION AND USE OF THE TEASEL.

BY Z. MOSES, MARCELLUS, NEW YORK.

Outside of the eastern states, it is presumed that a large number of farmers are unaware of the existence of the article, although it is used in the manufacture of all woolen cloth, from the coarsest army blanket to the finest broadcloth.

The writer having been engaged for a number of years in growing and dealing in this truly valuable product, believes that a few words relating to its culture and use would not be uninteresting to the reader of the agricultural reports.

Until the last fifteen years the factories were mostly supplied with teasels imported from England and France. At present the American teasel, of better quality than the English variety, nearly supplies the market. The first teasels grown in Onondago county, New York, were raised about thirty years since by an Englishman; and at present, it is believed, they are but little cultivated in this country outside of Onondaga, Madison, and Wayne counties, New York, and some portions of the New England States.

The wild teasel found at our roadsides in certain localities is of foreign derivation, and by some botanists is thought to be the original of the cultivated teasel; but it differs from it in this respect, that the points of the burs are straight and flexible, and are useless to the manufacturer, while the plant itself is a great annoyance to the careful farmer who would have his premises in a neat condition.

The teasel of commerce is a European plant greatly improved by cultivation. It is biennial; has a fleshy root which branches and tapers; an erect, furrowed, and prickly stem, branching near the top, five or six feet high; entire leaves springing on the margin and surface, those on the stem opposite and joined at the base, and generally filled with water. Scales, recurved at the apex, surround each of the florets, which are aggregated on burs from 1½ to 4 inches long; when the flowers have faded, these receptacles, having dried and hardened, and possessing elasticity, give the mature heads the value for which the plant is cultivated. The harder and more elastic the heads, the better the quality of the teasel; hence the farmer should select a stiff, strong soil, which is found to be most desirable for the purpose. Good wheat land is generally good teasel land.

Teasels are liable to be winter-killed in extreme cold weather unless protected by a covering of snow. From present appearances, it seems probable that in the State of New York one-third of the teasel plants were killed during the past winter from this cause. When the plants are very small they are sometimes in danger of drying or burning up from extreme hot weather. Continued warm wet weather is unfavorable to this crop in July, after the blossoms have set, softening and rusting the burs.

The seed is planted from April 25 to May 20 in drills 3½ feet apart, and covered by rolling or brushing. They are cultivated and hoed for the first time about June 10, and should be kept free from weeds during the season. The first year they spread out near the ground, similar to a bull thistle. (Teasels were formerly called "fuller's thistles.")

The second year they are hoed once during the month of May, and thinned from eight to twelve inches apart; where the plants have been winter-killed, the spaces are sometimes filled by careful transplanting. The plant rapidly shoots up and soon attains a hight of from five to six feet, branching out in different directions, bristling with teasels, which blossom and ripen from the first to the last of August; those at the top of the stalk, and the largest, are called "kings," and are cut first; the "middlings," or "mediums," grow on the end of the branches, and are cut next; the "smalls" at the sides of the main branches are cut last.

The cutting may be done by men and boys, gathering into baskets, using small hooked knives. Stout clothing and long leather gloves should be worn. An expert man will cut ten or twelve thousand per day of the first and second cuttings.

The crop must be carefully assorted and cured in barns or sheds by spreading them on rails, and should be frequently handled with large wooden forks to prevent heating, and also to clean them from seed, which falls out easily; they are then packed in boxes four feet square at the end and ten feet long.

Before using, the spurs and stems are clipped with shears; this can be done with boys' labor at an expense of about 20 cents per thousand. The manufacturers then set them in rows on the periphery of a large broad wheel, which is made to revolve at a high speed, and in such a manner as to bring them in contact with the surface of the cloth which passes over rollers in an opposite direction.

Many substitutes have been contrived of wires and springs, but nothing has been found which possesses the peculiar qualities of the teasel for raising the nap on woolen fabrics, the teasel points breaking off when meeting with knots or irregularities in the cloth which the metallic cards would tear out. It would almost seem as if nature had created this otherwise useless plant for this express purpose. The beautiful symmetry and regularity of the points on the teasel heads, and their wonderful elasticity, seem to mock at the skill of man.

"For art may err, but nature cannot miss."

"King" teasels are used on heavy coarse cloths for overcoating and blankets; "medium," or middlings, are used the most, and on any of our medium grades of woolen cloth; and the "smalls" are used on the fine pant stuffs, doeskin, shawls, etc.

The following table shows the labor expended per acre in raising an average crop of teasels:

	Days horse labor.	Days man labor.
Repairing ground and sowing	2½	1½
Cultivating and hoeing first year	1	7
Cultivating and hoeing second year	1	3
Harvesting an average crop	1	14
Assorting, handling and boxing		1
Total number of days per acre	5½	26½

An average crop is 130,000 per acre, of 10 lbs. per thousand; instances are known where 225,000 have been raised on an acre.

A few years ago 75 cents or $1 per thousand was thought to be a very good price; now, owing to the greatly increased manufacture and consumption of army cloths, and the increased price of the imported article from the increase on gold exchange and the high tariff, the American teasel brings triple the price it formerly did.

As will be observed from the foregoing table, the crop is an expensive one, but at the present high prices it pays exceedingly well. The demand, however, must always be uncertain and limited, depending almost wholly upon the condition of woolen manufactures in this country.

It is to be regretted that no reliable statistics can be found either of the amounts of teasel consumed, imported, or grown in this country.—*Rep. Agr. Dept.*

THE STEAM BOILER ASSURANCE COMPANY.

[From the London Engineer.]

Mr. Longbridge, the Chief Engineer to the Manchester Steam Boiler Assurance Company, has just laid his report for the year 1864 before the Directors. The following extracts will be found interesting and instructive:—

The total number of inspections made by the officers of the company in the course of the year was 23,849, of which 776 were internal, and 2,321 thorough examinations. Although the latter considerably exceed those of any former year, they yet fall short of what is desirable, on account of the comparatively few opportunities afforded; the owners of boilers being, in general, unwilling to allow any stoppage of their machinery for this purpose. The opportunities for thorough examination are, therefore, mostly limited to annual holidays, and the occasional stoppage of works from accidental causes.

The principal defects reported were as follows:—Fracture of plates and angle iron, 484; corrosion of do., 861; safety valves out of order or overloaded, 507; pressure gages out of order, 297, water gages, do., 364.

FRACTURES.

The dangerous defects under this head which frequently occur on the under sides of boilers, near the middle, have been before described; but there are one or two points in reference thereto on which it may be well to say a few words. I have explained that, in the case of boilers with internal furnaces, such fractures are attributable to unequal expansion, and may generally be prevented by so arranging the external flues that products of combustion, after leaving the internal flues, pass first along the under side of the boiler toward the front, and thence return by the sides to the main flue and chimney; also, that the insertion of vertical or diagonal water tubes in the internal flues, by facilitating circulation of the water, are conducive to the same end. That explosion does not more frequently take place when such fractures occur is evidently owing to the internal flues acting as stays or tie rods, and thus relieving the plates of the shell of a portion of the longitudinal strain. With plain cylindrical boilers, however, having no longitudinal stays, the risk of explosion under such circumstances is much greater, and it not unfrequently happens that boilers of this construction explode at the ordinary working pressure, without any previous symptom of defect. In many instances such fractures result from the objectionable practice of running off the water for cleaning before the adjacent brick work has had time to cool. The consequent overheating of the lower plates causes elongation of the boiler on the under side, which then becomes convex in the longitudinal direction. On the cooling of the brick work contraction and another change of form takes place, and the severe straining to which the plates are subjected, by the alternate expansion and contraction, ultimately produces fracture. When such boilers are suspended by bolts and nuts from cross beams or girders, as is common in the North of England, it has been observed, under the conditions mentioned, that the expansion of the boiler on the under side has raised the ends, lifting the nuts by which they had previously been suspended from one-half an inch to three-fourths of an inch above the girders.

Moreover, when repairing such boilers, too little attention is generally paid to the accurate fitting of the plates, and the importance of retaining the cylindrical form. Where holes do not correspond "drifting" is resorted to, and on completion of the repairs the boiler is often weaker than before, the plates being strained almost to the limit of their strength. This accounts for so many boilers of this construction having exploded shortly after having undergone repairs.

CORROSION.

It will be observed that defects under this head are much the most numerous. Many of the boilers inspected have been found in a most dangerous condition, and there can be little doubt that, but for the timely detection of these defects by the officers of the company, the number of explosions must have been considerably increased. The three principal causes of corrosion are these—defective workmanship, dampness of the seating, and acids in the water; the remedies for which are self-evident, and need not, therefore, be repeated.

SAFETY VALVES.

Thirty-one boilers were found working in great danger, owing to the safety valves being entirely inoperative. In many other cases the valves were greatly overloaded, and I must again draw attention to the very prevalent, but most objectionable practice of attaching extra weights to safety-valve levers. For example, I may mention one instance where, in addition to a large weight of 89 pounds attached to the lever of the valve, there were also a piece of 4-inch water pipe, a lump of cast-iron, and a pedestal belonging to the engine, weighing altogether 42 pounds. To another, beside the proper weight, were attached a cast-iron ball, a piece of 4-inch pipe, the flange of another pipe and a piece of wrought iron.

EXPLOSIONS.

The number of explosions, and the consequent loss of life in the past year have been less than in the preceding. In 1863 fifty-one explosions, causing the loss of ninety lives, came under my notice; in 1864 forty-three explosions, with a loss of seventy-four lives.

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The following table, though probably not comprising every boiler explosion that occurred, may be accepted as approximately correct:—

	No. of Explosions.	No. of Lives.
Iron-works and foundery	9	32
Coal and other mines	9	11
Locomotive	6	4
Agricultural engine	2	1
Steamboat	1	7
Corn mill	2	6
Saw-mill	2	1
Flax mill	1	1
Silk mill	1	1
Bleach works	1	7
Chemical works	1	0
Cement works, flint mill, brickyard	3	0
House	3	3
Boilers for other purposes	2	0
Total	43	74

As in previous years, it will be observved that iron-works and mines still maintain an unenviable pre-eminence for boiler explosions and destruction of life, but in cotton mills not a single explosion has been recorded for the year 1864.

GUIDE BOOK TO THE OIL REGIONS.

The American News Company has published a guide book to the oil regions in the form of a pamphlet of 95 pages, written by J. H. A. Bone. The author displays a thorough familiarity with all the oil districts, and has produced a work invaluable to all who intend to visit them, and interesting to many others. The following extracts will give a good idea of the contents:

The existence of oil in the valley of Oil Creek, in Venango County, Pennsylvania, was known for very many years. The Indians, from time immemorial, resorted to the valley at stated seasons to gather the oil for medical purposes; and the work of procuring it was prefaced and concluded with dances and other ceremonies. The oil bubbled up in mid stream in many places, and was obtained by throwing a blanket on the water, and, after it became saturated, squeezing the oil into the vessels prepared to receive it. The early settlers also used it as a medicine in cases of rheumatism, and it was frequently sold in druggists' shops for the same purpose, under the name of "Seneca Oil." An article in the "Massachusetts Magazine" for July 1791, describes the oil springs in what was even then known as Oil Creek and says that the American troops, in their marching that way, halted at the spring, collected the oil, and bathed their joints with it. This gave them great relief; and freed them immediately from the rheumatic complaints with which many of them were affected. The troops also drank freely of the waters, which operated as a gentle purge.

About twelve years ago some attention was directed in different parts of the world to the subject of petroleum, or rock oil, and search was made for it in various directions. Among other places Oil Creek became the object of attention, and a company was formed to procure oil from the oil spring, the existence of which had become known to a large number of persons. Nothing was done, however, until in 1858, Col. Drake, of New Haven, Connecticut, visited the valley, and set about sinking a well on Watson's Flats, about a mile and a half below Titusville. The first well was unsuccessful, and another was sunk. This was a success. The drill struck an oil cavity at a depth of seventy-one feet, and on the tools being withdrawn, the oil rose to within five inches of the surface. It was pumped off, and yielded at first four hundred, and afterwards a thousand gallons of oil per day.

As may be imagined, the excitement in the valley was very great. Every one that held land in the vicinity of the Drake well made preparations for sinking wells on his own account, or leased to others a right to sink wells, reserving to himself a royalty of from one-eighth to one quarter the oil. Derricks were hastily put up, and "spring poles" fixed, all of the early wells being sunk by hand. Some of the wells were successful, but by far the larger portion obtained no oil at all, or in such small quantities as to be unremunerative. The demand was small, the use to which the oil was put being as yet very limited. Still, several of the adventurers were making fair wages, when the discovery of flowing wells revolutionized matters. Pumping oil at the rate of five to twenty barrels a day was a discouraging process when, at another well, the oil was running spontaneously as many hundreds as the others were pumping single barrels. The glut of the market, caused by the flowing wells, and the consequent depression in prices, rendered the continuance in operation of the pumping wells a losing speculation, and nearly all of them were abandoned. The lessees fled in despair, in many instances leaving their machinery behind them, and not stopping to surrender their leases. Some of the abandoned wells have since been successfully worked, and more would be, but from the impossibility of getting at the holders of the old leases, and the fear to commence operations lest, at an unseasonable moment, the lessees should return.

The first flowing well ever struck was on the McElhinney or Funk farm. Funk was a poor man when the well was sunk. It was struck June, 1861, and commenced flowing, to the astonishment of all the oil borers in the neighborhood, at the rate of two hundred and fifty barrels a day. Such a prodigal supply of grease upset all calculations, but it was confidently predicted that the supply would soon cease. It was an "Oil Creek humbug," and those who had no direct interest in the well looked day after day to see the stream stop. But, like the old woman who sat down by the river side to let the water run itself out that she might cross dryshod, they waited in vain. The oil continued flowing with but little variation for fifteen months, and then stopped, but not before Funk became a very rich man.

But, long before the Funk had given out, the wonder in regard to it was overshadowed by a new sensation. Down on the Tarr Farm the Phillips Well burst forth with a stream of two thousand barrels daily. Not to be outdone by the territory down the Creek, the McElhinney tract "saw" the Tarr Farm, and "went it a thousand better." The Empire Well, close to the Funk, suddenly burst forth with its three thousand barrels daily, a figure subsequent flowing wells vainly endeavored to equal.

Chinese Chronology.

The Chinese mode of computing time differs from ours mainly because they have never adopted our system of calendar months; theirs are the lunar months; indeed they say, first moon, second moon, and so on. In order that their years may correspond nearly with the revolutions of the seasons, they are accustomed to put in an intercalary month when necessary, and this they do by repeating one of the twelve months; and this year they are to have two fifth months. This accounts for the shifting about of their New Year's day, making it some years earlier than others. They also date letters and business documents by the year of their reigning Emperor, but that year is not measured from the day he began to reign, for if the Emperor ascended the throne in the last month of the year, what remains of that twelvemonth is reckoned his 1st year, and the 1st day of the 1st month of the new year begins the second year of his reign. So in reckoning the ages of children; a child born on the last day of the old year is called 2 years old on the morrow, or New Year's day. The Chinese also reckon by cycles of 60 years each, which cycles were established in the 61st year of the Emperor Hwang-ti B. C. 2637, so that we are now entering the 2d year of the 76th cycle. Each of the 60 years has a particular designation, and this present year is called "Yut Chau," The Chinese also keep account of dynasties. They are now in the "Tai Tring" or "Great Pure" Dynasty, and in the 222d year of it, so that the date of this evening's Bulletin, if fully written out, would be: In the year Yut Chau, (2d year of the 77th cycle,) the 222d of the Great Pure Dynasty, 4th year of the Emperor Tung Chi, First Moon, Third day.--*San Francisco Bulletin.*

SIXTY thousand persons in England are dependent on locomotives for their existence, either as makers, drivers or stokers. The locomotives in England had increased from 5,801 in 1860, to 6,398 in 1862, and in about the same proportion since, while the export of English locomotives is steadily increasing.

THE *chevaliers d' industrie* of the lower sort in London have invented a new scheme. When a butcher's man has left a house, they enter it soon after with a tray of meat, and telling the servant that the wrong joint has been left, carry it off and never bring a substitute.

Correspondence

Circumference of the Ellipse.

[For the Scientific American.]

Several branches of mechanics and engineering experience the want of a correct mode of finding the circumference of an ellipse. The rules by the books give an approximation to truth only when the difference in the two diameters is small; and the most correct is by the formula:—$\sqrt{4D^2+d^2}+1\cdot11$.

The error in this rule increases with the elongation of the ellipse, and the true test for correctness is to apply it to both extremes of the ellipse, viz;—a circle having two equal diameters and a line with only one diameter. The rule now presented is circuitous but exact. *It gives the diameter of a circle of which the circumference is equal to that of the ellipse.* Rule:—Multiply the decimal ·13662* by the difference of diameters. Let the diameters take the form and office of a vulgar fraction; subtract what the fraction demands from the above product; repeat the process with the remainder; to this last remainder add the mean of the two diameters for diameter of required circle.

Example.

Diameters of ellipse	¼	
Decimal		·13662
Difference of diameter		3
		·40986
Subtract	¼	·10246
		·30740
Subtract	¼	·07685
		·23055
Add mean diameter		2·5
Diameter of circle		2·73055
Circumference of ellipse		8·576
Circumference by the formula		9·153
Test for circle diameters:—	¼	
Decimal		·13662
Mean of diameter		1·
Circumference of circle		3·1416
Circumference by formula		3·1395
Test for line diameters:—	0	
Decimal		·13662
Mul. by difference of diameters		·13662
Add mean of diameter		·5
Diameter of circle		·63662
Circumference (sides) of line		2.
Circumference (sides) by formula		2·22

Cincinnati, March, 1865. F. W. B.

*More accurately, ·1306197697.

Chimney Built Without a Scaffold.

We saw—says the *Shoe and Leather Reporter*—something new at the patent leather manufactory of Messrs. J. H. & T. W. Davidson, at Newark, N. J., recently. They are erecting a new chimney, which will be something over 100 feet high above the level of the ground, and it is being erected without scaffolding; to do away with the necessity for which they have inserted at given spaces bars of iron, which form a complete ladder in the interior of the chimney. The chimney is constructed with an outer and an inner wall, thereby giving an opportunity for a more rapid escapement of heat, and preventing the cracking of the wall so liable in the old mode of construction. The bars of iron and the two walls have given all the facilities required in its construction, and all that will be needed at any time for repairs.

Pyroligneous Acid in Chimneys.

MESSRS. EDITORS:—Your correspondent, D. W. E., of Racine, Wis., complains of the pyroligneous acid which with "moisture condenses and runs down the chimney." He does not say what evil he suffers from it, but I presume it runs along the pipe to the stove, leaking at each joint, making bad work with carpets, producing an intolerable odor, rapidly corroding the pipe, etc.

If this be the difficulty for which he asks a remedy,

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I can suggest one. Let him elevate the stove so that the fluid shall run toward the chimney and drop into it. The ashes which always accumulate in the bottom will furnish alkali enough to neutralize the acid, and his chimney will not be rapidly injured.

Vernon, N. J., March 2, 1865. C. A., M. D.

RECENT AMERICAN PATENTS.

The following are some of the most important improvements for which Letters Patent were issued from the United States Patent Office last week; the claims may be found in the official list:—

Photographic Locket.—This beautiful invention consists in producing a new ornament which combines with that character also an elegant souvenir. It is a miniature in gold of a photographic album, with leaves for pictures of friends, so made that each of the golden leaves receives two ferrotypes or other pictures, the number of leaves being varied with the size of the locket. The specimens we have seen contain places for eight miniatures, and are gotten up with great taste, and are chased and engraved with elegant designs. They form graceful "charms" to be worn by ladies and gentlemen. E. N. Foote, of No. 208 Broadway, New York city, is the inventor. The inventor had great difficulties to contend with in order to realize the usefulness of an album, having leaves opening like those of a book, in an article made of gold or other precious metal, and he has triumphed over these difficulties in a way that reflects great credit on his skill and ingenuity. This ornament will be popular both on account of its elegant design and its useful character, since one, with the aid of the photographic artist, can have with him always, in this elegant locket, the faces of his dear kindred and friends.

Condensing and Separating Oils and Gases.—This invention consists in certain improvements in apparatus for condensing and separating oils, liquids and uncondensible gases, in the process of distillation. The modes heretofore in use are liable to serious difficulties from the frequent choking of the condensing pipes or tubes, by the products combined with the heavy oils, such as paraffine and naphthaline, which, when brought suddenly in contact with a cool or refrigerating surface, are apt to solidify, fill up the pipes and obstruct the free passage of the vapors through the condenser, which frequently leads to the bursting of the still, and all its other dangerous results. The old mode of condensation, where the worms or pipes are immersed in tanks of water, are not suited for the condensation of hydro-carbon oils, on account of the difficulty of regulating the temperature of the refrigerating medium in the tanks. With the best attention the old modes are slow in operation and are attended with danger and inconvenience from the escape of uncondensed and permanent gases with the oils and liquids through the discharging end of the condensing worm or pipes.

These are some of the defects of the modes hitherto followed in distilling hydro-carbons. This invention has for its object to remove and to condense the vapors of distillation in a more perfect manner, and to separate the oils and liquids in such a way as to prevent the escape of gaseous matter therewith. Also to prevent the escape of uncondensed and permanent gases from the tail end of the condenser, which have heretofore passed off with the condensed liquid, whereby serious accidents have occurred from their presence in the atmosphere of the apartments where the operations are carried on; moreover, their odor is very offensive, and their inspiration injurious to health. W. G. W. Jaeger, of Baltimore, Md., is the inventor.

Machine for Printing Yarn.—This invention relates to certain improvements for printing what is known by the trade as "zephyr worsted." Such yarn presents a variegated appearance, alternately gray and black or any other desirable colors, one of which is the ground, on which the other is produced by printing. The operation of printing is usually effected by means of blocks, one of which is flat, so as to support the yarn, whereas the other is corrugated and arranged so that if its projecting points are supplied with the desired color and pressed down on the yarn, said color is transferred to one side of the yarn leaving the other side plain. It is obvious that by this method of printing, the desired effect is only partially obtained, and said defect is remedied by this present invention, which consists in printing the yarn simultaneously on both sides by running it through between the fluted rollers, which are supported with the requisite quantity of color by means of ink rollers or color rollers similar to those used in ordinary machines. E. J. Stephens and Hiram A. Green, Pawtucket, R. I., are the inventors.

Combination Pocket-knife and Fork.—This invention consists in combining a knife and a fork with a handle in such a manner that the knife and fork, when not required for use, may be folded or closed within the handle, kept firmly in contact and carried in the pocket with the same convenience as an ordinary pocket-knife, and when required for use, the knife and fork portions rendered capable of being readily detached so that they may be used in the same way as if they were made separately and had no connection with each other. The object of the invention is to obtain a combination of a pocket-knife and fork which will admit of the two parts being readily connected together and secured firmly in a connected state, and at the same time admit of being readily disconnected when required. T. B. Thorpe, of New York city, is the inventor.

Brick Machine.—This invention relates to a new and improved machine for pressing and molding brick and of that class in which the clay is pressed directly into the mold from the mud mill and a reciprocating mold carriage employed.

The invention consists, first, in the employment or use of an elastic pressure arm or blade attached to the lever part of the rotary shaft in the mud mill and arranged in such a manner that it will yield or give to hard foreign substances in the mud mill, such as stones, sticks, etc., and be prevented from being injured or broken.

The invention consists, second, in a novel manner of operating the molds or feeding the same to the place to be filled, whereby abundant time is allowed for the insertion of the mold and the operator or attendant enabled to feed the molds to the press as rapidly as the latter can fill them. John George, Jackson, Mich., is the inventor.

RECENT ENGLISH PATENTS.

Bossert's Combined Album and Musical Box.—The specification of this invention describes an album (especially for photographs) combined with a musical box, in such a manner that on opening the book-cover the music will begin playing, and continue to play until the book be closed, or otherwise. For this purpose a cord or similar connection is attached at one end to a hinged portion of the cover, and at the other to a pin or stud sliding in a slotted bar in the musical box, which is fitted in a recess or chamber contrived at the back of the cover or case containing the album. When this part of the cover is opened the cord works the pin, causes it to act on a lever having a stop at one end, and thereby releases a wheel on the axis of the barrel, and allows the box to play a tune. When the cover is closed the cord will be released, and permit the lever to be brought back by a spring, and the stop drops into the wheel and checks it. The book slides in grooves in the bottom of the cover.

Duffy's Umbrella and Parasol Hand Spring.—The specification of this patent describes the application and construction of a substitute for the wire now used for retaining and releasing the runners or travelers of umbrellas, parasols and sun-shades. This contrivance consists of a lever working in a recess in the stick or handle, in which is fitted a spring. The lever is formed with a projection, and furnished with a stud or thumb piece. When the lever is pressed inward the projection clears a slot in the runner, and allows its being slidden in the desired direction. But when the pressure is removed from the lever, the spring, being relieved, forces the projection outward, and allows it to pass though the slot in the runner, and to retain it.

Instruments for Indicating the Density of the Water used in Steam Boilers.—This invention consists in constructing those instruments in such a manner that they combine within themselves chambers or compartments, each having distinct or separate use or function, namely, a funnel-shaped piece or pieces, into which the water is allowed to fall by virtue of its gravity, whereby the steam is liberated as separated from the water, and ebullition in the instrument is prevented. Induction or supply tubes leading from the funnel-shaped piece or pieces into the bottom of a main tube, such tube being for the purpose of containing the hydrometer and thermometer, and eduction or overflow tubes by which the water overflowing from the main tube is received, and can thence be led away to the bilge or to any place convenient. In constructing such instruments the chambers or compartments may be combined in such manner that they shall form compartments of one vessel with a top or cover uniting the whole; or they may be separate compartments or tubes placed at a convenient distance apart, the necessary connection or communication being still maintained between them.

MISCELLANEOUS SUMMARY.

Diet of the French Workman.—He is up at early dawn. In fact every body rises soon abroad. There is more business done before ten o'clock in Paris than there is in London before eleven. There are two places where breakfast may be had—the *cremerie* and the soup shop. Some excellent coffee, with milk, cost less than ¼d, and the bread with butter 1d. For dinner the soup will cost 1½d; the plate of meat 2d; half a bottle of wholesome wine 4d, or a quarter of a bottle 2d, or a pint of beer or milk 2d, and all of really good quality. In many places they give soup, a piece of mutton or *beef a la mode*, bread, and half a bottle of wine for 60 centimes, or about 11 cents of our money.

New Anæsthetics.—Dr. Genges has addressed a note to the French Academy, giving an account of some interesting experiments in trying new agents for diminishing sensibility. He has ascertained that a purified kerosaline, obtained from common petroleum, when vaporized by means of heat, will be found a most valuable anæsthetic. But he especially commends, as safer than chloroform, Bromhydric ether, which is not only less inflammable than ordinary ethers, but possesses a most agreeable odor.

To keep Maple Sirup.—The Ohio *Farmer* says:—The best way to keep the sirup from losing flavor is to seal it up hot in cans, the same as fruit is sealed in the fall. At this time of year many of the fruit cans are empty and can be used for this purpose. Put up in this way maple sirup will keep for years, and retain that nice flavor it has when first made, but which is lost in a few months if kept in ordinary jugs or casks.

Weak Vision in the Aged.—In the case of aged persons whose sight is becoming enfeebled, and requires the aid of convex glasses great advantage is derived, supposing no nervous lesion to exist, from painting every evening the eye-lids and brow with laudanum, and allowing this to remain all night. So says Prof. Nascar, of Naples.

Coal under the Sea—Coal has been gathered up on the beach at Phippsburg, Me., for many years, and Professor Brackett, of Bowdoin College, thinks that a coal mine extends along the coast from Rhode Island to Nova Scotia, but that the bed of the coal is too far out at sea to be worked. The waves cast blocks of it upon the beach from time to time.

The "Transactions of the American Institute," which was noticed in the Scientific American some weeks ago, is not published for general circulation but for the members of the Association; a limited supply only is issued for the exclusive use of the parties designated.

A Loud Crow.—At the last meeting of the Polytechnic Association, in a discussion on the effect of topography on the sound of bells, Mr. Meyer, of Switzerland, stated that he had heard a cock crow at Wasser, across Lake Geneva—a distance of nine miles.

It is said that the first well in the Pennsylvania oil region was sunk in 1859. On the 28th day of August in that year the first vein of oil was struck at a depth of sixty-nine feet four inches from the surface.

The yield of maple sugar and maple molasses in the Northern States is 31,000,000 gallons annually.

Mr. J. H. Hatton of St. Joseph, Missouri, wishes to procure machinery for making stone ink bottles.

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Improved Spring Bed.

"Blest be the man who invented sleep," said Sancho Panza, the squire of the doughty knight of La Mancha, and blest be the man who invented spring beds says every weary and pain racked mortal who reposes on one for the first time.

Common beds are impositions on good nature. They look plump, inviting, and seem to say "here is rest," but when one's body is submitted to them they sink into hollows they rise in ridges and form seams of the most exasperating character in the very spots where none should exist. Spring beds are not given to such vices. Wherever an individual lies he is straightway supported, and from his neck to his heels the yielding couch beneath him falls into rounded curves that bear him up as the sea does a cork.

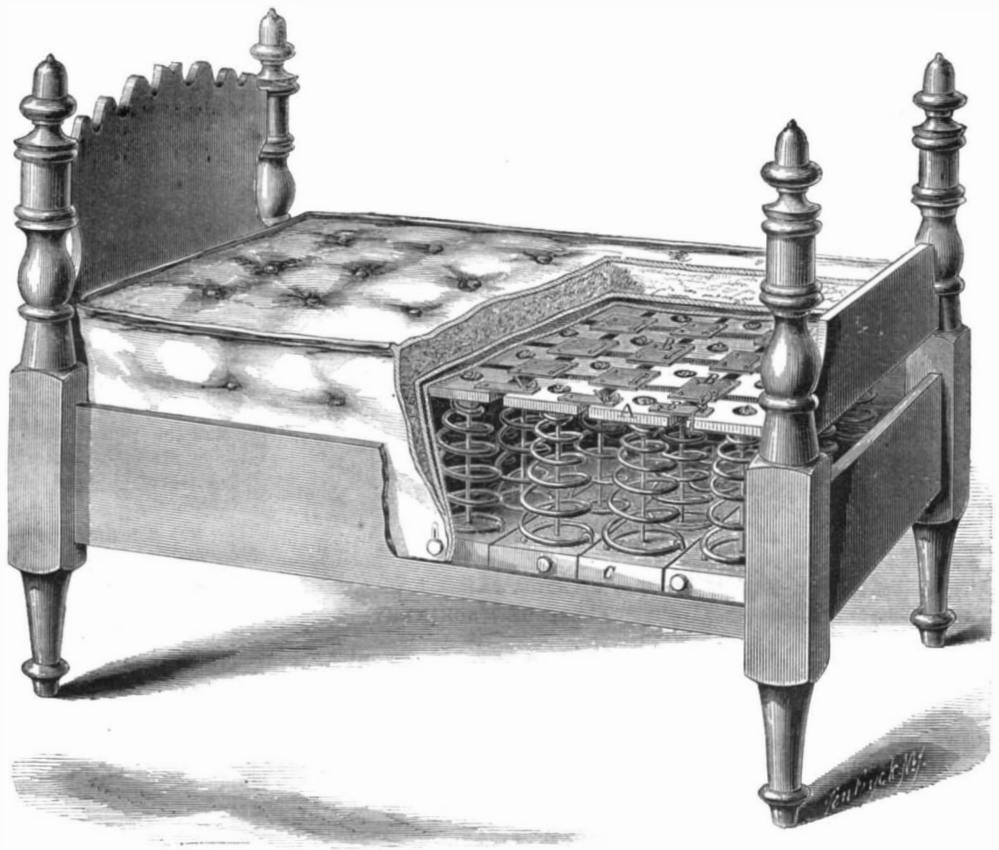
The bed here shown is a very excellent one. It is constructed differently from others of its class, and is so contrived as to afford a soft and luxurious support to the body in any position.

In principle the bed is much the same as others with the exception that each spring has an independent cap or top, A, which is, in turn, secured to its neighbor by flexible straps, B; these latter can be made of rubber or leather, as desired. At the bottom the springs of one section are all attached to a long slat, O. These fit in the bed frame, as all others do. From being made in sections great convenience in transportation is found, for it can be packed in a small compass, and thus save much of the expense for freight; it is also less likely to be injured than where the whole is in one piece. This bed can be used in connection with any ordinary mattress, but the one shown in the engraving is specially designed for it, and incloses all parts, so that dust, dirt and flock are kept out of the interior. When necessary to be cleaned each section can be readily taken out and washed without injury; this is very convenient where *insects* abound.

In this invention a difficulty which has always existed in the construction of spring beds and upholstery has been overcome. It has always been necessary to use the double cone or hour-glass spring to distribute the upward pressure over the entire surface of the chair or bed, in consequence of the shape of this spring—small in the middle and large at the ends—it is weak for its size and weight, and very liable to get bent over, having but little power of itself to maintain an erect position. The inventor of this new bed says that by the use of his cone caps, which work as toggle joints in the top of the springs, and with their flexible connections he is enabled to use the single cone spring, which having a regular angle from the bottom to the top, stands erect under great pressure, and is decidedly less liable to crush down under heavy weight; being untrammeled, except by the guide cones and connecting cords, it is left free to spring up and rise to a perpendicular position when the weight is removed. The cone caps all being securely connected to each other and to each of the springs by cords running down through them, make each serve as a brace to the other, thus forming a complete elastic and durable spring bed.

State rights for sale. Patented through the Scientific American Patent Agency on the 28th of February, 1865.

For further information address the inventor, G. W. Mitchell, at this office; a model can be seen at Lovejoy's Hotel, New York, where he will remain until April 15th, after which date at St. Louis, Mo.

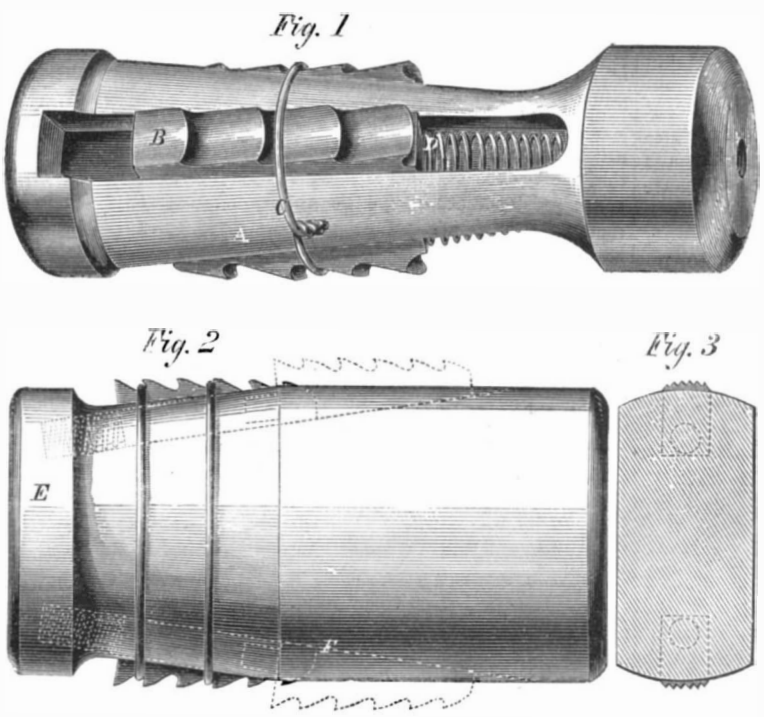


MITCHELL'S SPRING BED.

Implement for Destroying Cannon.

Since the use of cannon in warfare, there never has been a want of opportunities where they could not have been destroyed if necessary to the success of military operations. Cannon have been made temporarily unserviceable by spiking the vent, wedging shot in the bore, breaking off the trunnions, and in similar ways. With the implement here illustrated cannon can be quickly and effectually destroyed at no greater expense than the cost of a shell. At the commencement of the war, when our forces abandoned the Gosport Navy Yard the two or three thousand guns there would never have been used against us, if we had possessed this spiker.

The construction of it is as follows: the main portion, A, consists of wrought iron; this is turned true and grooved on three sides to receive the serrated slides, B. These slides are held in place by the wire, C, slipped over them, and by being fitted in tapering grooves, will accommodate themselves to wide ranges of caliber. The springs, D, give, as the spiker is pushed in butt first or with the teeth pointing toward the muzzle. These teeth have a sharp rake or angle outwardly, so that the least attempt to pull the instrument out causes them to cut into the bore and jam fast. The tapering form of the plug, A, also serves to wedge the cutters out so that it sticks tighter with every attempt to dislodge it.



BONZANO'S IMPLEMENT FOR DESTROYING CANNON.

Figs. 2 and 3 represent a spiker for guns of large caliber; parts on the side are cut away so as to make it lighter and easily handled by one man, and the forward end, E, is of hardened steel so that it cannot be cut or drilled out; the dotted lines, F, show the position of the cutters when the temporary wire is broken and they are pushed back. These spikers can be kept ready for use in the caissons. This invention was first successfully tested by Capt. Gibbs, U.S.A., at Fort Wayne, Mich., and subsequently at the Washington Navy Yard by Admiral Dahlgren. At the last trial the spiker was inserted in a 6·4-inch gun, a bag of 8 lbs. of powder was previously put in the gun.

The explosion moved the spiker 2¼ inches forward, where it lodged. The charge going out at the vent and past the spiker. The gun was subsequently removed to the machine-shop at the navy yard, where all attempts to remove the spiker from its position failed.

The inventor desires to sell the whole patent for the United States, and also invites propositions from responsible parties to introduce this invention abroad. Steps have been taken to secure Letters Patent for this invention in all foreign countries. Patents for it were obtained through the Scientific American Patent Agency, on the 24th of March, 1863. For further information address the patentee, Alonzo Bonzano, Detroit, Mich.

NOTHING more forcibly illustrates the superior condition and solid structure of the English railways than the speed of some of the mail trains. The night mail from Euston Square station, London, to Perth, in Scotland, performs the journey—451 miles—in 11½ hours, or at the rate of 40 miles an hour, including stoppages. The mail between New York and Washington—229 miles—goes through in from 11 to 12 hours, being about half the speed of the English mails.

It is evident that neither speed nor safety can be expected upon our railroads until they are rebuilt in a solid and enduring manner; many of the accidents occurring being the result of their bad condition.

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NEW YORK, SATURDAY, MARCH 25, 1865.

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PATENT LAW AMENDMENT.

On page 87, current volume of the SCIENTIFIC AMERICAN, we discussed the merits of a proposed amendment to the Patent Laws which was then pending before Congress. We are happy to state that the bill in question has now become a law. It provides that any person having an interest in an invention, whether as inventor or assignee, for which a patent was ordered to issue, upon payment of the final fee of $20, but who has failed to make payment as provided in the Act of March 3, 1863, *shall have the right to renew his application* for a patent for his invention, provided such application be made within two years after the date of the allowance of the original application.

This section will afford great relief to hundreds of inventors who have failed to pay the $20 within six months, and it is important that they should be prompt in availing themselves of its provisions.

The rule of the Commissioner of Patents, as applied to such cases, has not yet been issued, but we presume it will be so arranged that the applicant will need only to pay the first installment of the patent fee—$15—using the same model, drawings and specification, whereupon the Commissioner will cause Letters Patent to be issued.

TWO CAUSES OF THE NUMEROUS RAILROAD DISASTERS.

Polly Britain, a simple old woman living in a retired part of the country, once remarked:—"Very few people ever rode on railroads without being killed." If the railway accidents continue to multiply as they have during the last few months, this statement may be made by intelligent men.

These accidents are all the result of mismanagement on the part of the directors. If a competent and efficient superintendent be employed, and if he be supplied with sufficient funds to keep the track and rolling stock in repair, no accident will ever occur. There are long roads in the country that have been in operation more than thirty years without ever killing or injuring a passenger. The employment of an incompetent superintendent is certainly the fault of the directors: and, strange as it may seem, this has been done for the sake of saving a portion of the salary required to secure a capable man. This is surely the worst of all places for the practice of economy.

But as the character of our directors has not suddenly changed, there must be some special cause or causes for the great increase of railway accidents at the present time. Among the most important of these causes we suggest two—one political or social, and the other mechanical.

Among all the manifestations of the wide-spread and disastrous effects of an alteration of the currency, there is none more curious, as there is none more melancholy, than this increase in railway accidents. The rise in prices resulting from the augmentation of the currency has doubled the cost of repairs, and there is a universal belief that this inflation of the currency will be but temporary. Railway directors, therefore, in common with other bodies of men, are disposed to put off all expenditures until the same result can be accomplished with half the money. This has led to a postponement of all permanent improvements, and a resort to make-shifts and expedients to keep the roads running for a season with the least possible expenditure for repairs. As the inflation of the currency has continued longer than was anticipated, this system of using the railways without repairing them has been persevered in till both the track and the rolling stock have been worn to a wretched condition, and the natural result is this frightful succession of disasters.

Many of the railroad accidents have been produced by broken rails, and this we are told by a large iron manufacturer is mainly due to the extensive use for a few years back of cold short iron. It is said that this difficulty can be effectually remedied by the introduction of a small proportion of either coppery ore or Franklinite into the iron for rails. Competent directors would see that this danger was avoided, as well as that of running the roads when out of repair.

ABUSE OF MACHINERY.

There was once an individual in the wilds of Western Michigan who styled himself an engineer. He erected an engine, but finding the slides out of line with the bore of the cylinder, directed the fireman to go to a foundery and get some parting sand. This duty having been performed, the engine driver said: "Throw it on the slides, John; grind her down; that 'll fetch her!" and similar exclamations expressive of satisfaction. What our abrading friend desired to obtain was a smooth surface in line with the piston, and though his method of proceeding was, to speak mildly, open to criticism, his motive was correct and proper.

A workman educated in these modern days of progress sets the principal parts which are to work together in line, so that no disturbance arises from improper deviations.

While we can scarcely find men so ignorant as to throw sand on the slides of an engine, we discover many daily who are apparently unaware of the value of a good, smooth working surface in machines of any kind.

Since the labor of getting up these surfaces is very great, common sense, if not economy, would teach that the neglect of them is attended by injurious results; yet it cannot escape the professional observer that valve seats are not so often destroyed by excessive friction as by criminal carelessness; that cylinders are not so often scratched and destroyed by want of oil as by stupidity in packing them; that bearings do not heat on account of misproportion, but through lack of oil and attention, and that what we often hear when engines stop—"the packing is blown out," "the crank-pin brasses are broken," "the binder of the pillow block is cracked"—is, in most cases, palpable evidence of remissness.

Familiarity with danger begets indifference to it. So, constant employment about a steam engine, to men of moderate moral development and limited conscientiousness, does tend sometimes to make them careless. The proof of this is found in the constant occurrence of minor accidents which delay vessels and trains, add very much to the cost of repairs, and not unfrequently end in fearful catastrophes. It is therefore certain that while there are always many incidental disasters liable to happen to fabrics, and to material of all kinds under the strain imposed on it, in a steam engine, a great deal can be done to avert them by careful supervision and daily inspection. If eternal vigilance be the price of liberty, it is also the price of safety about steam boilers or in the construction of machinery of all kinds.

TRAVEL BENEFICIAL TO WORKMEN.

We have always thought that our workmen might imitate one practice of their German brethren with advantage. On attaining his majority the German operative is obliged to travel through certain parts of the country and learn the different processes and methods of practicing his art before he can settle down and follow his calling on his own account. The tendency of this rule, which is imperative, is to improve and enlarge the ideas of the mechanic. Working in one town continually, the artisan becomes familiar with the methods there practiced, and, whether good or bad, he is acquainted with these only. He is apt to become a man of one idea, and to think that the mechanical world is bounded by the limits of his own factory. It is unnecessary to remind the thinking reader that such a course is directly opposed to progress.

To become thoroughly imbued with a sense of the importance of travel as a means of developing and educating the mechanic, one has only to observe the different modes of doing the same piece of work practiced in different places. For instance, one man has a bed plate to plane; he roughs it off; takes half a dozen cuts where one would suffice, and dallies with the work, when an energetic business-like way of going at it would have done the same thing in half the time. New tools, new uses for old tools, new processes, materials and designs are only found by traveling about among other mechanics, and by getting acquainted with what is transpiring in the world of art outside of the sphere in which an individual may dwell.

Rolling stones gather no moss, says the adage, but we don't want any moss. Moss is a vegetable growth, the result of quiet seclusion, and a rooted adhesion to one spot. So are prejudices and notions, and if by rolling, mechanical stones can get rid of moss they will be benefitted thereby. He who keeps his eyes open, and travels to learn, not to go from pillar to post, will see the value of these suggestions.

GAS FROM PETROLEUM.

Much thought is being devoted to designing portable apparatus for making gas from petroleum, in order that isolated manufactories and even dwellings throughout the country may be supplied with the luxury of this clean and beautiful light. The general plan is to introduce a small stream of the oil into a little cast-iron retort that is kept at a red heat, generally by a fire of anthracite coal. The only purification to which the gas is subjected is simply to pass it through water, when it is taken directly to the receiver and thence to the burners.

It is supposed that the several hydrocarbons constituting petroleum undergo destructive distillation at the high temperature of the retort, and are converted into permanent gases. This is doubtless the case with a portion of them, but it is probable that others are simply evaporated, and these if in the same conditions would be again condensed to oil. Those of the most complex constitution would be the first to be decomposed. For instance, suppose the series begins with a hydrocarbon which is formed by the combination of 3 atoms of hydrogen with 5 of carbon, H_3 C_5, and that it advances by the addition of 2 atoms of hydrogen and 2 of carbon, in accordance with the law of other hydrocarbon series. Then we should have a series constituted thus:

H_3 C_5
H_5 C_7
H_7 C_9
H_9 C_{11}
H_{11} C_{13}

continuing perhaps up to H_{57} C_{59}. As the atom of carbon weighs six times as much as the atom of hydrogen, the simplest hydrocarbon of the series contains the largest proportion of carbon, still in all series of hydrocarbons yet examined, the simplest elements are the highest and most volatile, the density increasing and the boiling point falling regularly with the complexity, and the most complex being solids.

As it is a law of chemical compounds that the most complex, those containing the largest number of atoms, are most easily decomposed, if a quantity of petroleum were subjected to a temperature that would break up a part only of the hydrocarbons of

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which it is composed, those first to be decomposed would be the most dense. These would be formed into simpler, and therefore lighter and more volatile hydrocarbons, some of them perhaps into incondensible gases.

The volatility of the mass might perhaps be further augmented by the power of these gaseous hydrocarbons to dissolve, and hold in the form of vapor some of the heavier liquids or solids. Still, the difficulty to be apprehended in all varieties of apparatus for making gas from petroleum is a condensation in the pipes of liquid hydrocarbons which have been merely evaporated in the retort.

It is quite possible that this difficulty may be entirely overcome, when we shall have a gas from petroleum giving perhaps four or five times as much light as the ordinary coal gas, and a light of a very superior quality.

CHARGES AGAINST THE COMMISSIONER OF PATENTS.

We sometime since received a four-page pamphlet headed "Fraud and corruption in the Patent Office," addressed to the House of Representatives by one Andrew Whitelay, in which he makes twenty-five distinct charges against the Commissioner of Patents and the Chief Clerk.

A committee of the House, of which Mr. Higby, of California, was chairman, was appointed to investigate these charges. The Committee unanimously report that none of them were sustained.

We thought at the time we received the bill of charges, that the petitioner had too heavily loaded his piece. The Commissioner has escaped without harm, while Whitelay is slightly injured by the recoil of his own gun.

FARMERS' CLUB.

The Farmers' Club held its regular weekly meeting at its Room at the Cooper Institute, on Tuesday afternoon, March 14th, the President, N. C. Ely, Esq., in the chair.

BLACKBERRY WINE.

S. P. Nichols, of New York, presented a bottle of blackberry wine, stating that it is recommended by physicians in place of port. It was made from Lawton blackberries raised in New Jersey, and the crop made into wine yielded at the rate of $600 to the acre.

The President pronounced it a very rich wine with a heavy body.

Mr. Nichols said that it was made by adding two quarts of juice, two quarts of water, and three pounds of sugar.

CURRANT WINE.

R. G. Pardee remarked that the best wine that he ever saw was made from currants, three pounds of sugar being mixed with one gallon of juice without any addition of water. This wine, after it was three years old, was pronounced by judges of the greatest experience and intelligence, superior to any Maderia or other imported wine ever presented in this market.

Dr. Ward said that he makes two or three barrels of currant wine every year, and he finds it very variable in quality. He usually mixes with one quart of juice, two quarts of water and three pounds of sugar. He has experimented to reduce the proportion of sugar to the smallest quantity necessary to prevent acetous fermentation. Much depends on the ripeness of the fruit, and the promptness with which the juice is expressed after the fruit is gathered, as acetous fermentation will commence in the fruit before the juice is expressed, if it is allowed to lie many hours. Some of the very best wine that he ever saw was made by mixing one quart of juice with two quarts of water and two pounds of sugar.

TO INCREASE THE CROP OF MELONS.

Solon Robinson read a letter from a man saying that he finds it impossible to get his Hubbard squash vines to produce more than one squash at a hill, though he had tried pinching off the laterals and other plans.

Mr. Pardee replied that his course was very simple and plain. He has merely to pinch off the leader at a few inches from the hill and let the laterals grow. This is the proper treatment also for melon vines.

Revivification of Animal Charcoal.

Mr. H. Medlock writes the appended letter to the *Chemical News:*—

"Every tun of raw sugar refined in England contains from 7 to 10 lbs. of lime, the remains of that which has been used in the country of production to neutralize the acids of the cane-juice. It is this lime which chokes up the pores of the animal charcoal, and renders it inefficacious as a decolorizer. The removal of this lime from the spent charcoal has hitherto been to the refiner an insurmountable difficulty, but a Mr. Beanes, who has had more than twenty-five years' experience in the sugar plantations of Cuba, has, for some years past, devoted his chemical and scientific knowledge to the solution of the problem. How far he has succeeded in removing the lime and carbonate of lime, without attacking the phosphate, and so injuring the structure of the charcoal, is best proved by the fact that the largest sugar refinery in New York—that of Messrs. Havemeyer and Elder, have been using the process for six months, and they effect not only a saving of 100 per cent of charcoal, but they get a larger produce of sugar, and of a finer quality."

Prospective Demand for Corn.

An exchange says:—The farmers of this country should put in all the corn that they possibly can the coming spring. Large preparations are being made, in Buffalo, by parties who own the discovery of making sugar from corn, to manufacture a large quantity of sugar the coming year, and which will draw as largely on corn and divert it from its usual channels as to increase the demand and price of that staple. Add to this, the new discovery of making paper from corn husks and leaves, and that all of these articles that can be raised will find ready sale at any railroad depot, and it seems to us the corn crops will be looked to with more favor in the future, than in the past.

Flattering a Photograph.

A method has been recently suggested for softening the effect of photographic pictures, and removing the too faithful harshness with which they render some faces; or, in other words, of introducing a little flattery into photographic portraits. According to the *Photographic News*, M. Mathey suggests the following method:—"The plan is to have a lace curtain stretched on a wooden frame placed between the camera and the sitter; the further the curtain is from the model, and consequently the nearer it is to the lens, the softer the features appear; the threads of the lace give the grain of a chalk drawing or engraving, and the defects of the model are modified and softened down."

Our Shipping.

Notwithstanding the extensive transfer of our vessels to foreign flags to prevent them from falling into the hands of the rebel pirates, the decline in the amount of our shipping since the war commenced is surprisingly small. On page 258, Vol. II. (New Series) SCIENTIFIC AMERICAN, we publish a table of the tunnage of our shipping for each year from 1815 to 1859; the following statement of the tunnage for each year since 1859 is from the report of the Secretary of the Treasury:

	Steam Tunnage.	Total Tunnage.
1860	867,937	5,353,868
1861	877,204	5,539,813
1862	710,463	5,112,165
1863	572,970	5,126,081
1864	960,335	4,986,401

Improvement in Blasting.

Le Genie Industriel says that a plan, invented by M. Troreillet, has been presented to the *Societe d'Encouragement*, for increasing many fold the force of a blast in rocks with very small addition of labor in drilling. It is simply to enlarge the hole at the bottom by means of steel chisels, black diamonds, or in the case of limestone rocks by means of sulphuric or hydrochloric acid.

THE telegraphic line between Calcutta and Bagdad, just opened, by means of its connection with the telegraph between Bagdad and Constantinople, opens up direct communication between India and all parts of Europe.

THE expense of collecting internal revenue in this country is about two per cent, being some nine per cent less than the expense of collecting revenue in England.

ISSUED FROM THE UNITED STATES PATENT-OFFICE

FOR THE WEEK ENDING MARCH 14, 1865.

Reported Officially for the Scientific American.

☞ Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

46,765.—Radiator for Stoves.—Wm. P. Adams & Henry A. Adams, Norwich, Conn.:

We claim the two drums, A A', and pipes, C D E E and B, combined and arranged in connection with the damper, F, and applied to a stove to operate in the manner substantially as and for the purpose herein set forth.

[This invention relates to a new and improved heat radiator to be applied to stoves for the purpose of radiating the heat into the apartment and which now escapes into the chimney or flue.]

46,766.—Churn.—Hiram Allan, Jr., Wallingford, Conn.:

I claim the combination of flukes, a and c, with beaters, B and C, when constructed and arranged substantially as herein set forth so as to revolve in either the same or opposite directions.

46,767.—Method of Coating Glass with Platinum.—Louis Paul Angenard, New York City:

I claim the improved method or process of preparing and applying a solution of platina, as herein before substantially described, as a coating for the surface of glass or other articles for making mirrors and articles of use and ornament, as an improvement on my patent of the 31st January, 1865, for a like purpose.

46,768.—Plow.—John B. Atwater, Chicago, Ill.:

I claim, First, The combination of one or more rotating augers with one or more turn plows and an adjustable swinging frame, B, substantially as described.

Second, The employment of rotating augers upon a frame, B, that carries the plow, A A', and which is hinged at its rear arched ends to the rear supporting axle, D, and suspended near its front end from the beam, C, substantially as described.

Third, Arranging the augers in a line with and over the points of the plows when both augers and plows are sustained beneath and by a vibrating frame, substantially as described.

46,769.—Carbonic Acid Engine.—Nelson H. Barbour, Auburn, N. Y.:

I claim the application of the expansive force of the vapor or gas derived from the evaporation of liquified carbonic acid and other gases, and retaining the whole or a considerable part of the expanded gas to be again liquified for subsequent use, when the same is done through devices and by a power and machinery independent of or in addition to that connected with its own expansive force, substantially in the manner shown and described.

46,770.—Burner for Carbureted Air.—John A. Bassett, Salem, Mass.:

I claim the combination of the burner, A, with a carbureting apparatus used to produce an illuminating gas in the manner specified—the whole operating together for the purpose substantially as set forth.

46,771.—Apparatus for Carbureting Air.—John A. Bassett, Salem, Mass.:

I claim, First, The general arrangement of the apparatus, consisting of the several parts as shown and specified.

Second, The carburation of air or gases by the use of the concentric perforated cylinders with the fibrous covering, and partially immersed in the hydro-carbon liquid maintained at a uniform hight, substantially as shown and described.

Third, The automatic regulation of the quantity of air to be admitted to the carbureter by means of the valve connected with and operated by the holder through the lever and cord or their equivalents, when used for this purpose, as shown and specified.

46,772.—Buttons.—Philander H. Benedict, Syracuse, N. Y.:

I claim a button constructed with the parts, a b c d e f and g, substantially as described.

46,773.—Apparatus for Preventing Water Pipes from Bursting.—John Bevan, New-York City:

I claim, First, The elastic or flexible compressible water-tight ball, E, placed within a suitable chamber, D, provided in a water pipe, substantially as and for the purpose herein specified.

Second, The closed elastic or flexible compressible water-proof tube, B, placed directly within and extending any suitable distance along the passage of a water pipe, A, substantially as and for the purpose herein set forth.

46,774.—Preparation of Cloth and Vegetable Fiber for Bleaching.—George W. Billings, New-York City. Ante-dated Feb. 27, 1865:

I claim subjecting the fabric to a fermenting operation previous to bleaching, substantially as and for the purposes specified.

46,775.—Lamp for Heating Curling Irons, etc.—David T. Burrell, Bridgewater, Mass.:

I claim, First, An apparatus for heating irons, etc., operating automatically, substantially as described and for the purposes specified.

Second, The arrangement and combination of the main and small wicks, c c and e e, and extinguisher, g g, actuated so as to be raised and lowered by placing the iron or other implement upon or removing it from the apparatus, substantially as described.

46,776.—Horse Rake.—George E. Burt, Harvard, Mass.:

First, I claim the combination of the seat, J, with the arms, F F, and a rake constructed and arranged substantially in the manner specified, so that the weight of the operator will assist in operating the rake, substantially as described and for the purpose set forth.

Second, The arrangement and combination of the arms, D, the gripe, x, and cylinder, v, constructed substantially as described for the purposes set forth.

46,777.—Method of Consolidating Coal Dust, Peat, etc.—Waldron J. Cheyney, Wallingford, Pa., and E. T. Dieterichs, Philadelphia, Pa.:

We claim consolidating particles of coal, peat, and similar substances, by mixing with the same an aqueous solution of silica, and drying and compressing the same, substantially as specified.

46,778.—Governor.—Davic A. Clary, Pittsfield, Mass.:

First, I claim communicating to the clutches, acted upon by a revolving clutch, a movement endwise, substantially as specified, so that said clutches will separate from the revolving clutch so soon as an adjustment of the cut-off, valve, or other regulating mechanism, has been effected as specified.

Second, I claim the gears, m m o, and clutches, h q r, in combination with a yoke, l, moving endwise in substantially the manner and for the purposes set forth.

Third, I claim communicating to the yoke, l, an endwise movement by means of the nut and screw, actuated substantially as specified.

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46,779.—Money Safe.—Benjamin Cole, Brooklyn, N. Y.:

First, I claim the application to a money safe of a reciprocating beam, E, or other equivalent devic , carrying on one end a penny or other coin or device, and operating in combination with the receiving spout, B, and with one or more supplementary openings, C, in the manner and for the purpose substantially as set forth

Second, In combination with a money safe, I claim the registering apparatus, F, constructed substantially as described, so as to be operated by the act of introducing money in the manner and for the purposes specified.

46,780.—File-cutting Machines.—Moses G. Crane, Boston, Mass.:

I claim the manufacture of curvilinear surfaced files with teeth which have the direction of screw threads, when these are thrown up as burrs from the surface of the file blanks and continuously and spirally around the same to substantially a uniform distance there from.

Also, in a file-cutting machine, the combination and arrangement of mechanism substantially as described.

Also, the employment in connection with a file blank cutter of a gage in such manner as to regulate the depth of the cut by contact with the uncut surface of the blank, and so as not to interfere with the burr or tooth raised by the cut, substantially as and for the purpose described.

Also, making such gage adjustable with respect to the edge of the cutter, substantially as and for the purpose specified.

46,781.—Sugar-cane Press.—J. C. Crismar, Omaha City, Nebraska Territory:

I claim the rising and falling frame, C, in connection with the press box, composed of two parts, I H, in combination with the fixed or stationary plunger, J, and shaft or windlass, F, all arranged to operate substantially as and for the purpose herein set forth.

[This invention relates to a new and improved arrangement of the press box and plunger whereby the contents of the press box, after being subjected to the requisite pressure, may be emptied of the cheese or refuse with the greatest facility.]

46,782.—Boxes for Hats and Bonnets.—Oliver A. Dalley, Washington, D. C.:

I claim as a new article of manufacture a box for hats or bonnets, constructed with arched ribs or strips, as herein described.

46,783.—Blacking Box.—J. H. Doughty, New York City:

First, I claim the employment of an elevator or driver, C, in combination with a receptacle for holding blacking, substantially as and for the purpose set forth.

Second, The well, B, applied to a blacking box, A, and provided with an elevator, C, substantially as and for the purpose set forth.

Third, The pedestal, D, in combination with the box, A, well, B, and elevator, C, constructed and operating substantially as and for the purpose described.

[This invention consists in a blacking box provided with a chamber or well in which a plunger or elevator moves in such a manner that when said well is filled with blacking by the action of the plunger or elevator a sufficient supply of blacking for present use can be forced up above the bottom of the box at any moment, and thereby the outside of the box is kept clean, the brush is saved, and the blacking is prevented from becoming hard and dry.]

46,784.—Running Gear of Railroad Cars.—Spencer B. Driggs, New York City:

First, I claim a compound flexible car truck composed, substantially as herein described, of a main truck and one or more flexibly attached guide trucks, the wheels of the main truck supporting the weight or the greater portion thereof, and the wheels of the guide truck or trucks serving to keep those of the main truck parallel with the track, as herein set forth.

Second, Supporting the connected ends of two railway cars upon one flexible truck having supporting wheels and guide wheels, substantially as herein specified.

Third, The arrangement of a single supporting axle and pair of wheels and a vertical coupling pin for connecting two cars, with the axis of the said pin in the same plane with the axis of the wheels and midway between the two wheels, substantially as herein described.

Fourth, The connection of the ends of two railway cars with each other and with one supporting truck by means of one pin, substantially as herein set forth.

Fifth, Suspending the ends of two connected railway cars from one truck by means of chains, links, wire ropes, or other flexible connections attached to the cars at the extremities of the sides thereof, substantially as herein described.

Sixth, The connection of the supporting truck and guide truck or trucks of what I term a flexible truck for railway cars by means of springs, by which a portion of the weight received by the main truck is transferred to the guide truck or trucks substantially as herein specified.

Seventh, In combination with a truck for supporting the ends of two railway cars, I claim rollers, h h', attached to the car bodies, and receiving between them the transoms of the truck, substantially as herein described.

46,785.—Hay and Cotton Press.—Benjamin F. Dunning, Galesburg, Ill.:

First, I claim the wedge, I, falling between followers, C C, substantially in the manner and for the purposes specified.

Second, Applying the pressure to the hay etc., in successive sheets, when the sheets are fed in automatically, by means of a falling weight or its equivalent substantially as specified.

Third, The combination and arrangement of wheel, N, swivel-lever, Q, dog, x, thimble, R, and shaft, O, substantially in the manner and for the purposes described.

Fourth, The combination and arrangement of cap, K, dog, t, ratchet lever, L, and levers, S T and U, substantially in the manner and for the purposes specified.

Fifth, The feed rollers, E, and knives, i i, constructed, arranged and operating substantially in the manner, and for the purposes specified.

Sixth, The triggers, J J, when so constructed and arranged as to release the wedge, so soon as it shall have given one revolution to the feed rollers, substantially in the manner and for the purposes specified.

46,786.—Machine for Heading Dentists' Pins.—Wm. A. Duffy and Jethro J. Griffith, Philadelphia, Pa.:

I claim the combination of the double cam, E, the levers, F and O, with their adjustable auxiliary levers and friction rollers (or the described or other equivalents for the adjustable parts) the sliding piece, N, and jaws, M M', in the manner and for the purpose substantially as described.

46,787.—Time Indicator for Railroad Trains.—J. C. S. Fitzpatrick, Kalamazoo, Mich.:

I claim, first, A time table consisting of a series of dials with movable hands, having one such dial for every train so that the indicators for each train designated shall be permanent and not require adjustment except when changes are made in the time of starting as herein above set forth.

Second, In combination with a time reporter arranged as above specified, I further claim the employment of a cipher in the manner above described to indicate the suspensions of running of a train.

46,788.—Miniature Locket.—E. N. Foote, New England Village, Mass.:

I claim, first, The photographic locket, A, constructed and operated substantially as above described.

Second, I also claim securing the covers of the locket to the extensions, a a, respectively of the part, D, of its back, substantially as above described.

Third, I also claim making the inner plate, E, of the back of the locket, convex and rigid and hanging the leaves, I, thereto at different elevations on its convexity, substantially as and for the purpose above described.

46,789.—Quartz Crusher.—Perry G. Gardiner, New York City:

First, I claim the manner of combining and arranging a stationary mortar or kettle, of a partly spherical interior form, with a spherical concentrical ball operated by a diagonal shaft, d, connected with a vertical driving shaft by the arm, F, and the forked joint and bush, g g', operating in the manner and for the purposes described.

Second, I claim the combination and arranging the vertical hollow shaft, E, with the ball and basin or mortar, D C, whereby the ores to be pulverized are carried down continuously, without intervals for charging or discharging, and so as to distribute the falling ores equally on all sides of the ball and basin.

Third, I claim the peculiar form and structure, in two equal parts, of the cover or lid, K, by which it can be placed over the kettle without disturbing the operating parts, and made to revolve with the shaft, and arranged upon the trough, I, as described.

Fourth, I claim the form and arrangement of the movable trough, I, having its sides of unequal hight, and its trough perforated, and adapted and adjusted to the rim of the basin below and the revolving lid above, one to be used with or without water, as described.

46,790.—Hemming Gage for Sewing Machines.—William Gaskill, Cincinnati, Ohio:

I claim, first, The adjustable perforated and shouldered tongue, D, adapted to rise and fall with the pressure foot of a sewing machine, in combination with the adjustable shouldered plate, A, for the purpose of accurately gaging and neatly flattening the hem at the point and in the act of stitching as set forth.

Second, I claim the parts, A a B C c c' c'' D d E F f f' and F', combined and cooperating in the manner stated.

46,791.—Automatic Ratchet and Pawl.—Obed Gilder, Kinsman, Ohio:

I claim the pivot, C, the lever or break bar, E, and break roller, F, when the same are constructed as described in the aforesaid combination for the purposes set forth.

46,792.—Blacksmith's Forge.—J. H. Gould, Cincinnati, Ohio:

I claim, first, The combination with a forge of the sprinkling apparatus, O, connected with a water tank, g, or its equivalent arranged and operated substantially as and for the purpose described.

Second, I also claim the combination of the sprinkling apparatus, O, with the escape pipe of a water-back or water-tweer of a forge arranged and operated substantially as and for the purpose above set forth.

46,793.—Rendering Apparatus.—Carroll E. Gray, New York City:

I claim, first, Rendering fatty matter under pressure generated in the digester containing the fat by the direct application of heat thereto.

Second, the combination of the digestor with a heating chamber or furnace for the purpose of generating steam therein to render the fatty substance contained in the tank, substantially in the manner described.

Third, The combination of the receiver, H, with steam generating digester so arranged in connection with said digester as to receive the melted fat therefrom, and so that the heat of the furnace used to generate the steam in the digester is accessible thereto, for the supplemental operation of refining.

Fourth, I claim refining and purifying the rendered fat in a reservoir arranged in connection with the digester and filled with a coil of pipe so arranged in said reservoir and connected to said digester as to receive the steam therefrom and return the condensed water thereto substantially in the manner described.

Fifth, I claim deodorizing the gases generated in rendering the fat or driven off in refining and purifying it by passing said gases through a deodorizing chamber substantially in the manner described.

46,794.—Apparatus for Deodorizing Petroleum, Benzole, etc.—Joel Green, Rochester, N. Y.:

I claim the process of removing the existing gas of petroleum, benzole, naptha and other hydrocarbon liquids in vacuo, by means of the receiver, A, tank, B, and pump, C, arranged and operating substantially as and for the purpose herein set forth.

I also claim forming the tank in two compartments, D D', separated by the partitions, E G, and slide, H, provided respectively with the holes and perforations, h h' i, the whole arranged, combined and operating substantially as and for the purpose herein specified.

I also claim the agitator, K, in combination with the vacuum tank, B, receiver, A, and exhaust pump, C, arranged and operating substantially as herein specified.

46,795.—Hydrostatic Engine.—Thomas Hansbrow and B. B. Redding, Sacramento, Cal.:

We claim, first, The application of cushions to the cylinder of a water pressure engine, substantially as and for the purpose set forth.

Second, The air valves, c, applied in combination with the air cylinders, I, and main cylinder, A, in the manner and for the purpose substantially as set forth.

Third, The vibratory beam, M, in combination with the rod, m, adjustable tappets, b, valves, F K, and ports, a a' b b', in the cylinder, A, all constructed and operating in the manner and for the purpose substantially as specified.

[This invention consists in the application of air cushions to the cylinders of a water pressure engine in such a manner that the water pressing against the piston is prevented from acting as a solid and the engine is enabled to turn the centers as rapidly and as readily as it would with steam, gas or other elastic agent, and furthermore at the moment of the change of the position of the valves the water which has just performed its work in the cylinders, is expelled by the compressed air, before it can be followed by the piston on the stroke. Suitable valves connecting with the cylinder and opening inward, serve to admit a fresh supply of air and to prevent the possibility of the forming of a vacuum behind the piston. An air vessel connecting with the cylinder of this water pressure engine prevents the shock which otherwise would be produced every time the valves are on the center.]

46,796.—Harness Snap.—Horace Harris, Newark, N. J. Ante-dated March 1, 1865:

I claim the mode herein described of preparing the back end of the spring, D, to be attached to the hook, E, substantially in the manner specified.

46,797.—Pruning Hook.—Leonard M. Harris, Mattawan, Mich.:

I claim, first, The use of a hook, b, which is secured rigidly to its shaft, a, in combination with a knife, c, which slides upon the shaft, a, and is moved upward in the act of cutting, substantially as described.

Second, The movable crescent shaped knife, c, formed on a slide, d, in combination with the hook, b, which is secured rigidly to its haft, substantially as described.

46,798.—Hand Loom.—John G. and Henry T. Henderson, Salem, Iowa:

We claim, first, So arranging a flexible strap, that as the lay comes forward, it will be drawn alternately from one side of the picker staff to the other, and as the lay goes back will throw the picker staff around and throw the shuttle back and forth and required substantially as described.

Second, The combination of the shaft, f f, ratchet, g, and its pawl rod, r, pins, i i i, treadles, h h, and stop, u, for the purpose of elevating the upper shed as the lay comes forward and retaining it until the shuttle is thrown and the depressers, b b, placed on the swords for the purpose of taking the remaining treadles down as the lay goes backward substantially as described.

46,799.—Fence.—Elias Hollinger, New Haven, Ind.:

I claim the braces, B B', applied singly to the ends and centers of the pannels and secured by means of tanks, A A', battens, a a', slots, c c', keys, d d', and pins, e e', all arranged as herein specified.

[This invention relates to a new and improved fence of that class which are capable of being readily put up and taken down and are commonly termed portable fences. The invention consists in a novel manner of bracing the pannels and connecting the same together, whereby the fence may be firmly supported in position, readily put up and taken down and constructed at small cost.]

46,800.—Steam Engine.—Charles W. Isbell, New York City:

I claim, first, The two sector shaped cylinders, A A', arranged side by side in corresponding positions on opposite sides of a central plane in which is arranged the axis of a crank shaft common to both, and with their vibrating pistons connected with a common crank on the side shaft substantially as herein specified.

Second, In combination with the within described arrangement of two sector shaped cylinders, vibrating pistons and crank shaft, I claim the interposed induction chamber common to both cylinders substantially as herein described.

46,801.—Globe for Fishes.—Alfred Ivors, New York City:

I claim, First, The supply pipe, g, and escape pipe, f, constructed as specified, in combination with the overflow pipe, h, passing away from the pipe, f, and rising to the hight of the water in said globe or vessel, as and for the purposes set forth.

Second, I claim the pan, c, and pipe, d, fitted as specified, in combination with the globe or vessel to contain fishes, for the purposes and as specified.

Third, I claim a globe or other vessel arranged substantially as specified so that the water may be maintained at a given hight or caused to flow over the outside of said vessel as set forth.

46,802.—Stove Lantern.—David L. Jaques, Hudson, Mich.:

I claim the whole device substantially as set forth.

46,803.—Railroad Chair.—J. H. Jones, Ironton, Ohio:

I claim constructing the chair of two longitudinal parts, B B', one of which, B, extends up to the under side of the upper parts or threads, d, of the rails, A A, and the other B', extending up to the upper surfaces of the rails, both parts being provided with bases, a, and so formed as to grasp the lower parts of the rails, in combination with the clamps, C, and bolts, D, all arranged substantially as and for the purpose herein set forth.

[This invention relates to a new and improved chair for securing railroad rails to cross ties, and has for its object the securing of the ends of the rails in such a manner as to prevent them from rising and projecting up under the weight of the cars as the latter pass over them, and thereby avoid the hammering and battering of the ends of the rails, which is attended with great expense in keeping the rails in repair.]

46,804.—Method of Preparing Colors from Analine.—Xavier Karcheski, Bellville, N. J.:

I claim the application of gellatinous or fatty solution, vegetable or animal, such as starch, tannic acid, milk or glue, etc, in preparing paints from analine.

46,805.—Shanking Machine.—Wm. H. Kimball, Lynn, Mass.:

I claim the combination of the feed rolls, angular knife and guide, when arranged to operate together, substantially as set forth.

46,806.—Concentrating Table for Ore.—Guido Kustel, Dayton, Nevada:

I claim, first, The construction and use of a concentrating table, moving horizontally, and capable of having its inclination varied, when arranged in the manner and for the purpose substantially as described.

Second, I claim a horizontal moving concentrating table, in combination with the feeding pipes or openings, m m' and m'', and the water tanks, P P' and P'', as well as the water pipe, n3, or the ir equivalent, the whole being arranged and operated in the manner and for the purpose substantially as specified.

46,807.—Rudder.—Nicholas D. Le Pelley, Cleveland, Ohio:

I claim a rudder, constructed with two or more blades, having water passages between them and valves, all arranged to operate in the manner substantially as and for the purpose set forth.

46,808.—Joints for Pipes.—W. R. Maffit, Wilkesbarre, Pa.:

I claim connecting pipes in the manner and by the means described.

[The object of this invention is to supersede the old method for making joints in pipes, by the use of a wooden ring prepared by proper machinery, out of one solid piece, if the ring is small, or out of a number of sections or staves when the ring is large, and applied to the spiggot end of the pipe in such a manner that by the expansion or swelling of the wood in the bell a tight joint is produced; and, furthermore, the compressibility of the wood allows the pipe to assume an angular position, or a position deviating from a right line, without producing leakage; or, if desired, the inner surface of the wooden ring may be more or less convex, to give the pipes a still better chance to assume an angular position.]

46,809.—Mode of Obtaining Extracts.—Benjamin G. Martin, Philadelphia, Pa.:

I claim, first, Separating the particles of a material of which a decoction is to be made by introducing into a body of the said material a current or currents of air, for the purpose specified.

Second, The perforated casing, E, with its jacket, E1, combined with the tub, A, and operating substantially as and for the purpose specified.

Third, The condensing casing or cover, F, combined with a mash tub, A, substantially as and for the purpose set forth.

Fourth, The fermenting vat, I, with its false bottom, k, and pipes, m m, or their equivalents.

46,810.—Churn Dasher.—David McCurdy, Ottawa, Ohio:

I claim the cap, C, of an inverted funnel shape, or an approximate form, when used in combination with a dasher provided with inclined openings, a b, as and for the purpose specified.

[This invention consists in having the dasher perforated with a series of oblique holes, a certain number of which incline from the under surface of the dasher upward toward the dasher staff, the remaining holes inclining in a reverse direction, to wit: from the under surface of the dasher upward and outward toward the holes of the churn.]

46,811.—Windlass.—Wm. C. McGill, Cincinnati, Ohio:

I claim, first, The divider, D d, formed and adapted to operate substantially as set forth.

Second, In the described combination, the grooved drum or barrel, A a, and divider, D d, as and for the purpose specified.

Third, The combination of the divider, D d, and check pawl, E, substantially as set forth.

46,812.—Extension Ladder.—Warren Morehead, Parkersburg, West Va.:

I claim the combination of the triangular ladder, A, the sliding ladder, B, the guides, k, k, and the latch, E, constructed, arranged and operating in the manner specified.

46,813.—Drilling Machine.—Joel Moulton, Boston, Mass.:

I claim, first, Constructing the cutting surface of the drill, with teeth arranged with regard to it, and each other, as described, and for the purpose specified.

Second, The arrangement of devices for giving an intermittent rotary motion to the drill, operating as hereinabove described.

Third, Combining with the drilling mechanism a pumping apparatus, operated by the head of the drill shaft itself, as described.

Fourth, I claim giving the intermittent rotary motion to the drill shaft, u u, by devices inside of the tube or stock, o, as the latter is alternately lifted and depressed, "the drill shaft rising and falling within the stock."

46,814.—Horse Hay-fork.—M. D. Myers, Ilion, N. Y.:

I claim placing the spring bolt, G, or its equivalent, within the crotch, D, as and for the purpose specified.

46,815.—Drill.—Charles L. Noe, Bergen Point, N. J.:

I claim the tool or tool stock, A in combination with the sinker bar or hammer, C, and its interior arrangement of parts, b b, and c c, operating substantially as and for the purpose herein described.

46,816.—Row Lock.—Joseph W. Norcross, Middletown, Conn.:

I claim, first, Pivoting a row lock to a plate, A, by means of a horizontally turning joint, in such manner as to obviate the necessity of cutting away the gunnel rail to apply the row lock, substantially as described.

Second, The use of wings or shutters, in combination with a row lock, and the wash stroke of a boat, substantially as described.

Third, Forming the wings, F, upon the horns of the row lock, substantially as described.

Fourth, Applying the spring, e e, directly to and beneath the plate A, of the row lock, substantially as described.

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46,817.—Soap.—Daniel F. Packer, Redding, Conn.:
I claim a soap made and compounded substantially as above described.

[This invention consists in a new and useful improvement in the composition of a soap for cleansing purposes, and which can be used with advantage in the laundry, and for all other domestic purposes, and also in factories where goods are to be cleaned on a large scale, and which can also be used in removing stains from wood and other surfaces, which are painted or varnished, without at all affecting the paint. It is intended to be used for general purposes, but particularly for removing grease spots, cleaning paint, etc., and the specimen we tried answered its purpose perfectly.]

46,818.—Tube for Caves in Oil or other Wells.—John A. Patterson, Statelick, Pa.:
I claim the adjustable tube, A, elastic bands, B B, in combination with the springs, S S S, in the manner and for the purpose set forth.
Also, The follower or staves, 1 2 3 4, in combination with the tapered pin and collar, in the manner and for the purpose set forth.

46,819.—Lamp,—John M. Perkin and Mark H. House, Cleveland, Ohio:
We claim the wheel, A, and segment, B, when arranged as specified, or their equivalent.

46,820.—Machine for Cutting Tobacco.—Louis Planer, New York City:
I claim the combination of the slotted crank, T, the connecting rod, X, feed wheel, M, nut, T, feed lever, N, reversible paul, P, fixed screw and piston rod, I, with its piston head, H, tobacco box, A, and cutter, B, arranged and operating substantially as and for the purposes herein described.

46,821.—Grain Drill.—Bernard Regan, Miamisburg, Ohio:
I claim the provision in the seed box, A, of a scalloped or winged feed wheel, B, having collars, D D, occupying recesses, a, in the ends of the seed box, so as to be flush with the inner surfaces thereof, substantially as and for the purpose set forth.

46,822.—Vise.—Joseph Renshaw Michigan City, Ind.:
I claim the adjustable vise chop above described, consisting of the rocking plate and the steel clamp or holder, f, in combination with the bead, j, of the back jaw of the vise, substantially as above set forth.

[This invention consists of a movable chop, to be attached to the back jaw of a vise, by means of which any piece of work whose sides are tapering may be clamped therein with the utmost facility.]

46,823.—Journal Box.—Matthias J. Rice and W. H. Millen, Boston, Mass.:
We claim the combination of the oil reservoir, e, movable bearing, b, and oil passages, k, arranged with respect to each other substantially as specified.

46,824.—Oil Ejector.—Henry Searl, Rochester, N. Y.:
I claim, first, The arrangement of the receiving chamber, G, in an oil well or other deep well, when said chamber is connected with the surface or mouth of the well by means of the steam pipe, H, and the eduction pipe, J, and when said receiving chamber is supplied with the induction valve, T, and the eduction pipe, J, is supplied with a suitable valve, S, all substantially in the manner and for the purpose herein set forth, but not intended to be understood as making any specific claim to the induction valve, T, in said pumping apparatus.
Second, The arrangement of the cocks, M N O P and Q, in combination with the pipes. H L and J, all operating in the manner and for the purpose substantially as herein described and represented.

46,825.—Steam Trap.—John C. Shackleton and George Shackleton, Lawrence, Mass.:
We claim, first, The bottom of steam traps of unequal hight, so as to admit of a well at one end and a water discharge valve therein, so that the said valve shall remain immersed in the water of condensation while it is closed, substantially as described.
Second, We also claim the combination and arrangement of the air valve in the trap with the rod, H, and spring, j, and causing the same to be operated by the expansion of the rod, H, and by the spring, j, substantially as above described.
Third, We also claim the arrangement of the water discharge pipe, F, in combination with the guide tube, g, for guiding the valve, E, and the float, C, substantially as above described.
Fourth, We also claim the arrangement of the water charge valve below the place of the float, substantially as above described.

[This improvement in steam traps consists in part in the form of that part of the box in which the water discharge valve is placed, the arrangement being such as to keep that valve under water. There are also novelties in other parts of the trap.]

46,826.—Preparing Chewing Tobacco.—Henry D. Smith, New York City:
I claim a tobacco pellet or chew made out of tobacco incased and compressed between tobacco leaves or their equivalent, as a new article of manufacture.

46,827.—Instrument for Training the Muscles in Writing.—Edwin G. Squires, Lima, N. Y.:
I claim, first, The combination of the form, consisting of the rods, F G H and S, the spring thimbles, λ X, the roller, P, and the balls, R R, Fig. 1, with the grooved plate, B, Fig. 1, and stile. c e, Fig. 1, all operating in the manner and for the purpose substantially as herein described and represented.
Second, The combination of bars, D H and G G and K K, Fig. 2, with the plates. L and C, Fig. 2, the cog wheels, M and N, Fig 2, and the dials, C and D, Fig. 1, all operating in the manner and for the purpose substantially as herein described and represented.
Third, The hinged plate, f, and point, P, Fig. 3, in combination with the wires, R R and T T, Fig. 3, to form a stile, substantially as herein described and represented.

46,828.—Magazine Fire-arm.—Edward Stabler, Sundy Springs, Md.:
I claim, first, Limiting or arresting the movement of the carrier block of a magazine gun at any desired point, for the purpose of converting the arm into a single loader, substantially as described.
Second, I claim the stop, b, or its equivalent, in combination with the carrier block of a magazine fire-arm, operating as and for the purpose herein set forth.

46,829.—Machine for Printing Yarn.—Edward J. Stephens and Hiram E. Green, Pawtucket, R. I.:
I claim the fluted rollers, B B', in combination with color rollers, J J', and distributing rollers, L L', or their equivalents, constructed and operating substantially as herein set forth, for the purpose of printing yarn simultaneously on both sides.

46,830.—Harvester.—Gustavus Stone and Joseph P. Bullock, Beloit, Wis.:
We claim, first, The curved arms, G J, bell crank lever, F b, and links, C H, constructed as herein described, in combination with the caster wheels, K L M N, crank shaft, F I, and bar, C, all arranged and employed in the manner and for the purposes specified.
Second, In combination with the above we further claim the lever, P, notched bar, Q, shaft, T, provided with the crank, k, and connecting rods, O U, all arranged in connection with the main frame, A, and cutter or finger bar, C, to operate as and for the purpose specified.

[This invention relates to a new and improved means for adjusting the cutter or finger bar; that is to say, raising and lowering the same, so that grass may be cut at any desired length, and the cutter or finger bar also temporarily raised, so that it may pass over obstructions which may lie in its path.]

46,831.—Apparatus for Railroad Car.—James B. Talmadge, Winsted, Conn.:
I claim, first, Producing a current and circulation of air in a railroad car, by means of a fan wheel or blower, driven by a wind wheel on the outside, in the manner and for the purpose substantially as set forth.
Second, The self-adjusting apparatus, consisting of the upper box, B, and its wind wheel, its doors and vanes, and of the lower box, D, with its fan, constructed and combined substantially as above described.
Third, I also claim the method, substantially as above described, of constructing and operating the doors of the circular box, O, and the vanes, which are connected thereto, so that they are automatic in their action.

[This invention consists in applying a wind wheel to the outside of a railroad car, so that it will be made to rotate by the motion of the car through the air, and in communicating motion from it to a fan wheel inside the car, and thus induce a circulation of the air in the car.]

46,832.—Combined Knife and Fork.—T. B. Thorpe, New York City:
I claim a combined pocket knife and fork, provided with separate parts or handles, A B, having respectively hook projections, E, and slots, F, at their inner sides, in combination with notches, c, in the fork plate, a, so arranged when the fork is closed to fit over or receive the hook projections, F, and prevent the casual detachment of the parts, substantially as described.

46,833.—Sawing Machine.—Edsell Totman, Columbus, Pa.:
I claim the sawing machine hereinbefore described, consisting of the frame, A, shaft, C, pulleys, N P, swinging frame, Q, crank wheel, H, pitman, I, and saws, R L, constructed and arranged as specified.]

[This invention consists in combining a reciprocating and a circular saw, in such a manner that a sawing machine may be obtained for sawing either large or small logs, and the machine easily changed, so as to be used in either capacity, as may be desired. The invention is designed for sawing logs, transversely with the grain, such as are commonly termed cross-cut sawing machines.]

46,834.—Wagon Brake.—F. L. Tripp, Prescott, Wis.:
I claim the bar, F, and shoe or brake levers, G G, connected with the rod, I, in combination with the pawls, J, and ratchets, K, all arranged and applied to the wagon, substantially as and for the purpose herein set forth.

[This invention relates to a new and improved wagon brake, of that class which are commonly termed self-acting, and it consists in having the parts arranged in such a manner that the wheels, when the wagon is backed, will be automatically relieved from the brake, the latter at the same time operating perfectly when the wagon is descending an eminence.]

46,835.—Machine for Crushing Sugar Cane.—Don Carlos Turner, Madison, Wis.:
First, I claim the stirrup, L, suspended from the fixed bearing of the upper roller, and sustaining the lower rollers in place in the act of pressing, and allowing them a free motion, and so arranged as to bind the rollers together, so as to confine the strain principally to the middle of the frame, substantially as herein set forth.
Second, In combination with the stirrup, L, I also claim the yoke, K, and rollers, C D and B, substantially as and for the purposes specified.
Third, In combination with the yoke, K, provided with the rounded bearings, d d, and with the rollers, C B D, the boxes, I I, provided with transverse grooves, c c, resting on said bearings of the yoke, the whole so arranged that the yoke is allowed to vibrate to open or close the rollers, and so that either one end or the other of the lower rollers may be depressed more than the opposite end, to allow any inequality to pass through, substantially as herein set forth.
Fourth, The spring, s, and block, h, in combination with the yoke, K, and rollers, C B D, arranged and operating substantially as described.

46,836.—Skate.—Thomas Van Wagoner, Newark, N. J.:
I claim the combination of the screw, g, and nut, h, with the bars, C D, arms, c c d d, slots, a. and claws, l l l l, constructed as described, and employed for securing the skate at the front and heel, simultaneously, as explained.

46,837.—Manufacture of Felted Fabrics.—Enoch Waite, South Natick, Mass.:
I claim the improved felt fabric, made of a backing and two sheets of felt, cemented together and arranged, substantially as specified.

46,838.—Differential Lever.—George I. Washburn, Worcester, Mass.:
I claim so constructing a combined lever, A A', that it may, by the projection of its parts, form a state of equilibrium, be made to communicate a reciprocating motion to a plunger or other mechanical appliance.

46,839.—Straw Cutter.—John R. Whittemore, Chicopee Falls, Mass.:
I claim, first, The combination of the knife, C, mouthpiece, B, shaft, E, bolt, a, keg, c, and piece, F, when constructed, arranged and operating substantially as described.
Second, Securing the mouthpiece, B, to the hopper, A, by the pieces, D D D, as described.

46,840.—Button.—J. F. Wild, New York City:
I claim the disks, D E, and shank, B, for fastening buttons, substantially as herein shown and described.
I also claim the use of the disk, C, in combination with the above parts, substantially as and for the purpose herein shown and described.

[The object of this invention is to attach button to cloth in a very quick and firm manner, without sewing; also, to facilitate the removal of the buttons from the cloth. The improvement is applicable to almost every variety of material of which buttons are made.]

46,841.—Furnace for Finishing Steel Iron.—W. Dewees Wood, McKeesport, Pa.:
I claim constructing the heating chamber with a perforated cover and floor, so arranged relatively to the fire chamber and flues, so that the fire and heated air shall enter the chamber through these openings in the cover and floor, at various points above and below the level of the sheets of iron placed therein, substantially as and for the purposes hereinbefore described.
Also in combination with the perforated floor of the heating chamber, the rails, t t, raised above the level of the floor for supporting the sheets of iron.

46,842.—Fastening Railroad Rails.—Alfred Arnold (assignor to himself, H. B. Stanton and D. C. Eaton), North Englewood, N. J.:
I claim a screw with a head suitably adapted to railroad rails, to hold the rails firmly to their ties or sleepers, and which has but one point in its revolution to free the rails and admit of their removal, substantially as herein described and for the purposes herein specified.

46,843.—Saw-grinding Machine.—John G. Baker (assignor by mesne assignment to Henry Disston), Philadelphia, Pa.:
I claim the disk wheel, C, and casing, B, adapted to the reception and retention of the saw blades, in combination with a grindstone, to which a lateral vibrating motion is imparted through the medium of the devices herein described, or the equivalents to the same, for the purpose specified.

46,844.—Well-boring Apparatus.—Chas. E. Foster, Philadelphia, Pa., assignor to Rock Drill Mining and Manufacturing Company of Pennsylvania:
I claim, first, The drill or cutter, G, combined with the tubes, B, and operating substantially as described.
Second, The casing. A. and tube, B, in combination with the casing, C, its cutter, rod and valve, the whole being constructed and operating substantially as and for the purpose specified.

46,845.—Brick Machine.—John George, (assignor to himself and Henry Hague), Jackson, Mich.:
I claim, first, The elastic or yielding blade or arm, G, attached to the rotary shaft, F, substantially as and for the purpose herein set forth.
Second, The frame or carriage, J, operated by the cam, C, on the shaft, F, and the weight, L, attached to the frame or carriage, substantially as and for the purpose specified.
Third, The friction rollers, e, applied to the frame or carriage, J, and fitted in guides, K, substantially as and for the purpose set forth.

46,846.—Screw-cutting Machines.—Stephen W. Goodyear (assignor to Charles Parker), Meriden, Conn.:
I claim, First, The combination of the rotating grooved cylinder with a fixed covering plate which bears horizontally upon the shanks of the blanks but endwise against their heads, and with a movable covering plate, for the purposes and in the manner substantially as described, thus forming a conveying tool.
Second, I claim the combination of the cylinder with the movable jaw, forming together a vise, in which the blank may be rigidly held for such operations as nicking, or a journal in which the blank may be rotated for threading, etc., thus forming a holding tool.
Third, I claim the combination of a cylinder, such substantially as is herein described, as having its fixed and movable covering plates with the curved feeding slide trough, whereby without the use of the usual system of grippers, etc., the blank may be conveyed to the place where it is to be operated on, as set forth.

46,847.—Manure.—Wm. D. Hall (assignor to the Quinnipiack Company), Hamden, Conn.:
I claim preparing concentrated artificial manure from lobster refuse by dessication and pulverization, substantially as herein described.

46,848.—Circular Knitting Machine.—Thomas Hawthorne (assignor to Dudson Hawthorne & Bros.), Philadelphia, Pa.:
We claim, First, The radially arranged levers. C, to each of which is permanently secured a self-acting needle, c, in combination with the annular plate, D, its zig-zag edge, and the presser wheels, I, the whole being arranged and operating as set forth.
Second, The combination of the said vibrating levers and self-acting needles with a serrated presser wheel and the said annular plate with its zig-zag edge for the purpose specified.

46,849.—Well-boring Apparatus, etc.—Henry Howson, Philadelphia, Pa., assignor to the Rock-drill Manufacturing and Mining Company, Pa.:
I claim the use, substantially in the manner described, of cams or eccentrics in combination with the arresting devices herein described, or the equivalents to the same, for controlling the downward velocity and force of well-boring rods.

46,850.—Apparatus for Operating Torpedoes, etc.—John L. Lay, Buffalo, N. Y., assignor to himself and W. W. Wood, Philadelphia, Pa., assignors to Donald McKay, East Boston, Mass.:
I claim, First, The pipe, C, arranged to receive and to act as a guide for the shell in combination with a stem or rod for pushing the shell through the said pipe, all substantially as set forth.
Second, The plate or socket, D, and straps, E, secured to the vessel and arranged for the reception and retention of the end of the pipe, C, substantially as described.
Third, The internal pipe, I, adapted to the reception of the operating bar, K, and arranged for attachment to and withdrawal from the pipe, C, substantially as described for the purpose specified.

46,851.—Picket Boat and Apparatus for Discharging Torpedoes.—Wm. W. W. Wood, Philadelphia, Pa., and John L. Lay, U. S. Navy, assignors to Donald McKay, East Boston, Mass.:
We claim, First, the spar, D, connected to a boot and controlled by tackle, substantially as described, in combination with the within described socket or its equivalent, for carrying and retaining a submarine shell or torpedo.
Second, The socket composed of the tube, d, its chamber, e, and plate, I, the whole being constructed and arranged for the reception of the torpedo substantially as set forth.
Third, The projection, K, of torpedo passing through an opening in the plate, I, and the retaining and releasing pin, m, and lanyard, t, the whole being arranged and operating substantially as described.
Fourth, The arms, n, cords. n', of the socket and lanyard, p, arranged in respect to the projection, f, of the torpedo, substantially as and for the purpose set forth.

46,852.—Apparatus for Carrying and Exploding Submarine Torpedoes.—Wm. W. W. Wood and John L. Lay, Buffalo, N. Y., assignors to Donald McKay, East Boston, Mass.:
We claim, First, The spar, B, sleeve, C, and its shaft, D, constructed and applied to a vessel substantially as and for the purpose herein set forth.
Second, The guide, d, chains or ropes, G and F, in combination with the said spar, B, and movable sleeve, C, the whole being arranged and operating substantially as described.

46,853.—Apparatus for Operating Submarine Shells or Torpedoes.—Wm. W. W. Wood, Philadelphia, Pa., and John L. Lay, Buffalo, N. Y., assignors to Donald McKay, East Boston, Mass.:
We claim, First, The combination of the operating bar, H, the internal sliding rod, 12, and the jaws herein described. or other equivalent retaining or releasing devices, the whole being arranged and operating substantially as described for the purpose specified.
Second, The packing, 15, secured to the internal rod. 12, and fitting to the interior of the operating rod, 13, as and for the purpose set forth.
Third, The casing, 14, arranged on the end of the operating bar. H, for the reception of the shell, 15, as and for the purpose herein set forth.
Fourth, The combination, substantially as described, of the operating bar, H, with a cord, 23, so arranged and so connected with the shell and with appliances for igniting the charge in the same that the bar as it approaches the limit of its inward movement shall be the cause of exploding the shell.
Fifth, The chamber, 22, combined with the casing, 14, and arranged for the reception of the discharging cord, 23, as set forth.
Sixth, The two driving shafts, F and F', with their chain bands, the chains, Q and G, and the operating bar, H, the whole being constructed, arranged and operating substantially as set forth.
Seventh, The click wheel, L'', operated from one of the driving shafts, and arranged to control the clutches on the said shafts, as set forth.
Eighth, The sliding blocks, I and V', caused to traverse in guides by the aid of screws, substantially in the manner and for the purpose described.
Ninth, The sleeve, T, adapted to the operating bar, H, and combined with the mechanism herein described, or the equivalent to the same, whereby the said sleeve can be turned in a vertical or horizontal plane, as herein set forth.
Tenth, The said sleeve, T, in combination with the slides and guides and operating screws herein described, or the equivalent to the same, whereby the said sleeve can be moved to and fro horizontally.
Eleventh, The adjustable stop of the steam cylinder, in combination with the sleeve, T, and the system of levers, chains and pulleys herein described. or the equivalent to the same, whereby the said sleeve can be raised and lowered and its downward motion limited, as set forth.
Twelfth, The combination of the said movable sleeve, T, the operating bar, H, and ball and socket joint, the whole being constructed and arranged for joint action substantially as set forth.
Thirteenth, The combination of the said sleeve, T, its friction rollers, V V, and the operating bar. the whole being arranged and operating substantially as and for the purpose described.
Fourteenth, The arresting plate, 2, in combination with the operating bar, H, and its internal rod, 12, the said plate being arranged to operate in conjunction with the appliances herein described, or the equivalents to the same, substantially as and for the purpose herein set forth

46,854.—Auger.—E. C. Gillette, Richfield, British Columbia:
I claim the cam sleeve, C, in combination with the slotted shaft, C, and with the flat notched shank, D, of the auger, constructed and operating in the manner and for the purpose substantially as set forth.

[This invention consists in the application of a standard in combination with an auger in such a manner that said standard will guide and support the auger while boring, and that the greater part of the twists usually given to augers for that purpose can be dispensed with; further, in the use of a graduated shaft in combination with the auger and standard in such a manner that the depth of the hole can be observed at any moment without taking the augur out; finally, in the application of a cam sleeve in combination with a slot in the lower end of the shaft and with a flat notched shank of the auger in such a manner that the auger can be readily fastened to or unfastened from the shaft whenever it may be desired.]

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46,855.—Manufacture of Cigars, Cigarettes, etc.—Lazarus Morgenthan, Baden:

I claim as a new article of manufacture the fichtennadle cigars above described, the tobacco being partially filled with preparations derived from shoots of the pine tree, substantially in the manner and with the effect herein set forth.

I also claim the fichtennadle preparations herein described adapted for use in the manufacture of cigars in the manner and for the purposes herein set forth.

46,856.—Method of Lubricating Machinery.—Pierre Etienne Proust, Paris, France:

I claim the method, substantially as herein described, of lubricating journals, consisting of the simultaneous application of water and grease, as set forth.

46,857.—Machine for Pulling Flax.—Anson Burchard, Livingstonville, N. Y.:

I claim a frame mounted on wheels which form a fulcrum for the frame to vibrate on, which frame is armed with a series of stationary teeth in combination with a series of traversing teeth arranged to operate substantially as described for the purpose set forth.

And in combination with the devices above claimed I claim the clearing pan for removing the flax from between the teeth after it is pulled.

46,858.—Lock.—William B. Dodds (assignor to himself and Neil Macneale), Cincinnati, Ohio:

I claim, first, The method of operating and detaining the bolt by means of the dog pivoted thereto, the bit of the dog engaging the detent stump when the bolt is thrown substantially as described and represented.

Second, The method of operating and adjusting the disc tumblers by the application to each of a disc or annular armed plate provided with a pin, which latter projects through the hole in its appropriate tumbler and engages with the arm of the annular plate appertaining to the tumbler next in series substantially as described.

Third, The washer interposed between the tumblers in the series and prevented from rotating by the tooth which engages in the slot in the socket substantially as and for the purpose described.

46,859.—Molder's Table.—Jacob Lebrau, Cincinnati, Ohio:

I claim the rolling or tipping table for molders' flasks constructed and operating substantially as and for the purposes set forth.

46,860.—Elastic Packing for the Exterior of Pumps in Deep Oil Wells.—Joel Moulton, Boston, Mass.:

I claim the packing elastic material one or more made to embrace the exterior of the tube and having a flaring flange or cup as described adapted to expand into the inequalities and crevices of the shaft or well under the pressure of the superincumbent water and its or their own elasticity substantially as described.

46,861.—Burner for Gas Stoves.—Edmund Osmond, Cincinnati, Ohio:

I clahm the heating gas burner formed of the tapering or contracted tube, B C, applied to the service nozzle, a, in the manner set forth.

46,862.—Faucets.—Joseph Nottingham Smith, Jersey City, N. J.:

I claim closing the faucet by a valve or stopper shutting upward in its orifice substantially as and for the purpose herein specified.

I also claim the inclosing spout or discharge tube, D, arranged and applied substantially as and for the purpose herein set forth.

I also claim the combination of the handle, G, with or without a spring, o, in combination with the slotted ears, H H, of the discharge tube, D, substantially as and for the purpose herein described.

I also claim the vent aperture, i, in combination with the valve, c, and discharge tube, D, for the purpose specified.

46,863.—Machine for Raking and Loading Hay.—Joseph Nottingham Smith, Jersey City, N. J.:

I claim pivoting the draught hooks, I I, to the rear of the elevator frame, so as to produce the necessary length of the draught line to insure freedom of motion, as set forth.

I also claim the swinging frame, L, with its lever, K, whereby the draught hooks may be detached from the wagon or cart, and the elevator is retained and supported in its upward position after being detached, substantially as and for the purpose herein specified.

I also claim the construction and arrangement of the side rake teeth, Q R S, substantially as and for the purpose herein specified.

I also claim the combination of the inwardly gathering side rake teeth, Q R S, and the elevating teeth, P P, constructed and arranged substantially as and for the purpose herein set forth.

I also claim the arrangement of the rake, so as to be drawn flat on the ground, by the freely-vibrating or double-pivoted draught bars, N N, drawing the rake teeth by the rear ends thereof, substantially as herein set forth.

I also claim the concavely curved under surfaces of the rake teeth, together with the projecting heels, u u, behind their pivot shaft, n, for the purpose set forth.

I also claim constructing the elevator with its rake heads, e e e, inside of and its teeth, f f f, projecting through the endless apron, D, substantially as and for the purposes herein specified.

46,864.—Closing Bottles.—Robert Robinson, New York City:

I claim the valve or stopper, B, with the spring, C, attached to it, in connection with the conical neck, A, of the bottle, substantially as described.

I further claim the cap, D, provided with the frame or projection, E, or its equivalent, for pressing in the valve or stopper, B, and serving as a guide for the escaping liquid, substantially as described.

46,865.—Machine for Cutting Files.—Alfred Weed (assignor to himself and Lewis J. Bird), Boston, Mass.:

I claim, First, Supporting the blank by a roller so constructed and arranged as to be susceptible of a lateral movement or play, and so as to keep the top surface of the blank always horizontal and present its whole width to the chisel, as set forth.

Second, The combination of an elastic pad or bunter attached to the cutter arm with an adjustable stop, so operating together that while preventing variation in the force of the blow, as the file is being fed along, the depth of the cut may be regulated at pleasure, substantially as described.

Third, I claim the method herein described of holding and feeding the file blank by means of a feed mandrel or shaft carrying the one end of the blank in a central socket and a bed, or the equivalent thereof, for the support of the other end or of any part thereof intermediate between the two ends, in combination with a pressure pad or lever for holding the blank on the support, substantially as set forth.

Fourth, In combination with a feed mandrel or shaft holding one end of the file blank, I claim a roller bed and a pressure pad for supporting and holding the other end or any part thereof intermediate between the two ends.

Fifth, The construction and arrangement of the roller, u, shell, w, and ball shaft, v, as described.

46,866.—Breech-loading Fire-arm.—Isaac Sutvan (assignor to Barton H. Jenks), Bridesburg, Pa.:

I claim, First, The combination of a vibrating breech piece and a vibrating latch and hammer when said vibrating latch and hammer are both placed in a fork or recess in the movable breech piece.

Second, I claim the safety device or locking the latch brace by means of the projection or inclined planes on the top of the hammer acting on the under surface of the latch in its forward movement, thus securely locking the breech before the hammer can explode the cartridge.

Third, I claim the action of the latch upon the trigger and hammer when the breech is open preventing any forward movement of either before the breech is closed and relieving itself from the top of the trigger, substantially as described.

RE-ISSUES.

1,900.—Lamp:—Joshua E. Ambrose, Middletown, N. Y., assignor to Sarah E. Ambrose, Passaic, N. J. Patented April 23, 1861:

First, I claim the use or employment of the water chamber, C, communicating through a stoppered opening with the body or fountain, A, of the lamp, and arranged to operate substantially as and for the purpose set forth.

Second, The arrangements of the springs, k, shaft, g, and wheels, h, substantially as shown, for elevating and lowering the wick, as described.

Third, In combination with the cone, K, I claim the short tube, I, for the attachment of movable inner deflecting plates, for the purpose specified.

Fourth, I claim the plate, N, constructed as shown, and operating with the outer cone, K, for the purpose described.

Fifth, I claim providing the deflecting plates, L and M, with the flanches, as described, and combining either of them with the wick tube, F, for the purpose specified.

Sixth, I claim the use or employment of either of the deflecting plates, L and M, having flanches constructed as described, in combination with the wick tube, F, and tube, I, for the purpose set forth.

Seventh I claim arranging and combining the cone, K, cap, J, and either of the deflecting plates, L and M, so that the base of the flame shall be brought between the two deflectors, for the purpose herein described.

Eighth, I claim making the slots of the deflecting plates, L and M, and of the cap, J, narrow, for the purpose described.

Ninth, In combination with the wick tube, F, and cone, K, I claim the use or employment of either of the deflecting plates, I and M, or cap, J, as shown, for the purpose specified.

1,901.—Loom.—Merrill A. Furbush, Philadelphia, Pa., and George Crompton, Worcester, Mass., assignees of Edward W. Brown, Fall River, Mass. Patented July 25, 1854:

We claim, first, The combination of the pattern chain, the pawls, and the reversible tappet shaft, or their equivalents, substantially as described.

Second, The tappet shaft, constructing and operating substantially as herein described, to turn about its axis, in either direction, or remain at rest, as desired, for the purpose specified.

Third, The reversible tappet shaft, or its equivalent, in combination with the pawls or their equivalents, constructed and arranged substantially as described and for the purpose specified.

1,902.—Condensing and Separating Oils and Gases.—Wm, G. W. Jaeger, Baltimore, Md. Patented June 28, 1859:

First, In apparatus for condensing oils and other liquids, I claim, in combination, an annular condensing chamber, through which the vapors or oils and other liquids are to pass as they come from the retort or still, a condensing surface surrounding such chamber, and a condensing surface surrounded by such chamber.

Second, I also claim the combination of a condenser with the conducting pipe, m, having an inclined bottom, substantially as described, whether the condenser be arranged within or without a refrigerating surface, or with both such surfaces, in the manner here shown.

Third, I also claim a trap at the discharge end of the worm or other pipe of a condensing apparatus, for trapping the uncondensed gases and preventing their escape from the end of the condenser, substantially as above described.

Fourth, I also claim placing a pipe or other opening back of the discharging end of the worm or condenser, for the delivery of uncondensed gases from the same, substantially as above described.

Fifth, I also claim the combination of a pipe or other opening back of the discharging end of the worm, with a trap, substantially as above described.

Sixth, I also claim a fan or other means for creating a suction, in combination with a pipe, x, opening into the worm or condenser, as shown, for taking off the gas therefrom, substantially as described.

Seventh, I also claim interposing a condenser between the retort and condensing worm, to secure the heavy oils before they reach the worm, substantially as described.

Eighth, I also claim the use of a fan or equivalent means for relieving the pressure of the vapors in a condensing apparatus and still, and facilitating their movements through such apparatus, substantially as described.

1,903.—Machine for Cutting Tobacco.—F. W. Ritterhoff, C. A. Colquitt and Wm. Mulchahey (assignees of Ritterhoff & Colquitt), New York City. Patented Feb. 23, 1864:

We claim, first. The lever catch, L, applied in combination with the spindle, M, of the follower, O, and with one or more eccentrics, G, substantially as and for the purpose set forth.

Second, The adjustable levers, H, in combination with the lever catch, L, eccentrics, G, and followers, O, constructed and operating substantially as and for the purpose specified.

Third, The tappets, J, in combination with the adjustable levers, H, lever catch, L, eccentrics, G, and follower, O, constructed and operating substantially as and for the purpose described.

Fourth, The movable nut, P, in combination with the spindle, M, constructed and operating in the manner and for the purpose substantially as set forth.

DESIGNS.

2,037.—Stove Ornament.—Isaac De Zouche, Cincinnati, Ohio, assignor to Bridge, Beach & Co., St. Louis, Mo.

2,038.—Door Lock.—Burton Mallory, New Haven, Conn.

PATENTS

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MUNN & COMPANY,

In connection with the publication of the SCIENTIFIC AMERICAN, have acted as Solicitors and Attorneys for procuring "Letters Patent" for *new inventions* in the United States and in all foreign countries during the past *seventeen years*. Statistics show that nearly ONE-THIRD of all the applications made for patents in the United States are solicited through this office; while nearly THREE-FOURTHS of all the patents taken in foreign countries are procured through the same source. It is almost needless to add that, after *seventeen years'* experience in preparing specifications and drawings for the United States Patent Office, the proprietors of the SCIENTIFIC AMERICAN are perfectly conversant with the preparation of applications in the best manner, and the transaction of all business before the Patent Office; but they take pleasure in presenting the annexed testimonials from the three last ex-Commissioners of Patents.

MESSRS. MUNN & Co.:—I take pleasure in stating that, while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE CAME THROUGH YOUR HANDS. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the office, a marked degree of promptness, skill, and fidelity to the interests of your employers. Yours very truly,

CHAS. MASON.

Judge Mason was succeeded by that eminent patriot and statesman, Hon. Joseph Holt, whose administration of the Patent Office was so distinguished that, upon the death of Gov. Brown, he was appointed to the office of Postmaster-General of the United States. Soon after entering upon his new duties, in March, 1859, he addressed to us the following very gratifying letter.

MESSRS. MUNN & Co.:—It affords me much pleasure to bear testimony to the able and efficient manner in which you discharged your duties as Solicitors of Patents, while I had the honor of holding the office of Commissioner. Your business was very large, and you sustained (and I doubt not justly deserved) the reputation of energy, marked ability, and uncompromising fidelity in performing your professional engagements.

Very respectfully, your obedient servant,

J. HOLT.

Hon. Wm. D. Bishop, late Member of Congress from Connecticut, succeeded Mr. Holt as Commissioner of Patents. Upon resigning the office he wrote to us as follows:

MESSRS. MUNN & Co.:—It gives me much pleasure to say that, during the time of my holding the office of Commissioner of Patents, a very large proportion of the business of inventors before the Patent Office was transacted through your agency; and that I have ever found you faithful and devoted to the interests of your clients, as well as eminently qualified to perform the duties of Patent Attorneys with skill and accuracy. Very respectfully, your obedient servant,

WM. D BISHOP.

THE EXAMINATION OF INVENTIONS.

Persons having conceived an idea which they think maybe patentable, are advised to make a sketch or model of their invention, and submit it to us, with a full description, for advice. The points of novelty are carefully examined, and a written reply, corresponding with the facts, is promptly sent, free of charge. Address MUNN & CO., No. 37 Park Row, New York.

As an evidence of the confidence reposed in their Agency by inventors throughout the country, Messrs. MUNN & CO. would state that they have acted as agents for more than TWENTY THOUSAND inventors! In fact, the publishers of this paper have become identified with the whole brotherhood of inventors and patentees, at home and abroad. Thousands of inventors for whom they have taken out patents have addressed to them most flattering testimonials for the services rendered them; and the wealth which has inured to the individuals whose patents were secured through this office, and afterwards illustrated in the SCIENTIFIC AMERICAN, would amount to many millions of dollars! Messrs. MUNN & CO. would state that they never had a more efficient corps of Draughtsmen and Specification Writers than those employed at present in their extensive offices, and that they are prepared to attend to patent business of all kinds in the quickest time and on the most liberal terms.

PRELIMINARY EXAMINATIONS AT THE PATENT OFFICE.

The service which Messrs. MUNN & CO. render gratuitously upon examining an invention does not extend to a search at the Patent Office, to see if a like invention has been presented there; but is an opinion based upon what knowledge they may acquire of a similar invention from the records in their Home Office. But for a fee of $5, accompanied with a model, or drawing and description, they have a special search made at the United States Patent Office, and a report setting forth the prospects of obtaining a patent, &c., made up and mailed to the inventor, with a pamphlet, giving instructions for further proceedings. These preliminary examinations are made through the Branch Office of Messrs. MUNN & CO., corner of F and Seventh streets, Washington, by experienced and competent persons. Many thousands of such examinations have been made through this office, and it is a very wise course for every inventor to pursue Address MUNN & CO., No 37 Park Row, New York.

THE VALIDITY OF PATENTS.

Persons who are about purchasing patent property, or patentees who are about erecting extensive works for manufacturing under their patents, should have their claims examined carefully by competent attorneys, to see if they are not likely to infringe some existing patent, before making large investments. Written opinions on the validity of patents, after careful examination into the facts, can be had for a reasonable remuneration. The price for such services is always settled upon in advance, after knowing the nature of the invention and being informed of the points on which an opinion is solicited. For further particulars address MUNN & CO., No. 37 Park Row, New York.

The Patent Laws, enacted by Congress on the 2d of March, 1861 are now in full force, and prove to be of great benefit to all parties who are concerned in new inventions.

The law abolishes discrimination in fees required of foreigners, excepting natives of such countries as discriminate against citizens of the United States—thus allowing Austrian, French, Belgian, English, Russian, Spanish and all other foreigners, except the Canadians, to enjoy all the privileges of our patent system (except in cases of designs) on the above terms. Foreigners cannot secure their inventions by filing a caveat; to citizens only is this privilege accorded.

CAVEATS.

Persons desiring to file a caveat can have the papers prepared in the shortest time by sending a sketch and description of the invention. The Government fee for a caveat is $10. A pamphlet of advice regarding applications for patents and caveats is furnished gratis, on application by mail. Address MUNN & CO., No. 37 Park Row, New York.

REJECTED APPLICATIONS.

Messrs. MUNN & CO. are prepared to undertake the investigation and prosecution of rejected cases, on reasonable terms. The close proximity of their Washington Agency to the Patent Office affords them rare opportunities for the examination and comparison of references, models, drawings, documents, &c. Their success in the prosecution of rejected cases has been very great. The principal portion of their charge is generally left dependent upon the final result.

All persons having rejected cases which they desire to have prosecuted, are invited to correspond with MUNN & CO., on the subject giving a brief history of the case, inclosing the official letters, &c.

HOW TO MAKE AN APPLICATION FOR A PATENT.

Every applicant for a patent must furnish a model of his invention if susceptible of one; or, if the invention is a chemical production, he must furnish samples of the ingredients of which his composition consists, for the Patent Office. These should be securely packed, the inventor's name marked on them, and sent, with the Government fees, by express. The express charge should be pre-paid. Small models from a distance can often be sent cheaper by mail. The safest way to remit money is by a draft on New York, payable to the order of Messrs. MUNN & CO. Persons who live in remote parts of the country can usually purchase drafts from their merchants on their New York correspondents; but, if not convenient to do so, there is but little risk in sending bank bills by mail, having the letter registered by the postmaster. Address MUNN & CO., No. 37 Park Row New York.

Patents are now granted for SEVENTEEN years, and the Government fee required on filing an application for a patent is $15. Other changes in the fees are also made as follows:—

On filing each Caveat	$10
On filing each application for a Patent, except for a design	$15
On issuing each original Patent	$20
On appeal to Commissioner of Patents	$20
On application for Re-issue	$30
On application for Extension of Patent	$50
On granting the Extension	$50
On filing a Disclaimer	$10
On filing application for Design (three and a half years)	$10
On filing application for Design (seven years)	$15
On filing application for Design (fourteen years)	$30

SEARCHES OF THE RECORDS.

Having access to all the official records at Washington, pertaining to the sale and transfer of patents, MESSRS. MUNN & CO., are at all times ready to make examinations as to titles, ownership, or assignments of patents. Fees moderate.

ASSIGNMENTS OF PATENTS.

The assignment of patents, and agreements between patentees and manufacturers, carefully prepared and placed upon the records at the Patent Office. Address MUNN & CO., at the Scientific American Patent Agency, No. 37 Park Row, New York.

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Notes & Queries

W. B. H., of N. Y.—We find that the errors you mention in your rule for cutting screws, given on page 99, current volume, were committed by you in your MS. It was very plainly written, as you state, and was revised with the greatest care. The errors were in the examples given, however, and not in the printed rules, so that they will have no effect on the several formulæ.

H. H., of Ind.—You ask us to tell you how to turn a piece of round iron perfectly square. We answer, put it in a planer; that is the quickest way to "turn" it square. You can make a rod any shape in a lathe if you have a rest properly made, and a "former" or pattern to move the rest in and out, but that is an operation which requires special tools. If you cannot understand the rules for change gears we are sorry; they seem simple to us. Try this one, for a compound or four-gear lathe. Guess at any three wheels you like; say the wheel and pinion on the stud and the driver on the spindle; then multiply the number of teeth in the driver on the spindle by the ratio of the lead screw to that you desire to cut, and again by the teeth in the wheel on the stud which meshes in the gear on the screw; divide the product by the stud wheel in contact with the first driver on the spindle, and that will give the number of teeth on the lead screw, or the last wheel driven.

W. L. B., of Mass.—We have no recollection of the water wheel which was to be driven by water forced by a steam engine, but it needs no knowledge of the result to answer your question. It did not "amount to anything." It would manifestly be more economical to apply the steam engine directly to the machinery, as there would be considerable los of power in applying the water to a wheel.

W. L. B., of Cal.—Your plan for protecting iron ships from fouling, by means of copper sheathing, with gutta-percha between the iron and copper, we believe is not new. Should there be any metallic connection between the two metals the copper would be protected at the expense of the iron, which would be very rapidly corroded.

J. F., of N. Y.—To make water-proof cloth take two pounds four ounces of alum, and dissolve it in ten gallons of water; in like manner dissolve the same quantity of sugar of lead in a similar quantity of water, and mix the two together. The cloth is immersed for one hour in the solution, and stirred occasionally, when it is taken out, dried in the shade, washed in clean water, and dried again. This preparation enables the cloth to repel water like the feathers of a duck's back, and yet allows the perspiration to pass somewhat freely through it, which is not the case with gutta-percha or india-rubber cloth.

C. H. W., of Mass.—The temperature at which steam will condense in an air-tight vessel depends entirely upon the quantity of steam contained in the vessel; the greater the quantity the higher the temperature at which condensation will take place. Gmelin says that if all pressure, including that of their own atmospheres, were removed, all bodies would take the gaseous form at all temperatures, but Rankine says that the zero of gaseous tension is 493·2° Fah. below the freezing point of water

J. McD. and J. D. D., of N. Y., and E. W. G., of Mass.—We are not able to give you the information sought.

M. G. T., of Mich.—Address H. C. Baird, No. 406 Walnut street, Philadelphia, for Bourne's Catechism, which is the book you require.

J. E., of N. Y.—King's Notes on the Steam Engine.

N. C., of Pa.—You say that you are using a machine which is an infringement of a patent held by another party, as recently re-issued, but which was not an infringement of the original patent, and you inquire whether you are liable for such infringement. We answer unhesitatingly that you are liable for continuing the use of the machine after the re-issue, although it was put in operation before the re-issue. The re-issue goes back to the date of the original patent, and is granted upon the ground that the whole invention was intended to be covered by the original patent, but through accident or mistake the patentee omitted fully and properly to state and claim his full invention. In such case the law grants him a re-issue, whereby he corrects the mistakes, and it relates back to the date of the original patent; but the patentee cannot recover for any infringement committed before the date of the re-issue.

D. J. S., of N. Y.—The sewing-machine patent of Elias Howe, Jr., was issued Sept. 10, 1840, and was extended for seven years from Sept. 10, 1846. A second extension can only be obtained by a special act of Congress. Of this probability you can judge as well as ourselves.

R. D. B., of Md.—Zinc is the most susceptible metal to heat. Platinum is the least so.

NOTICE TO SUBSCRIBERS.

The first five numbers of the present volume of the SCIENTIFIC AMERICAN being out of print, we shall commence the time of each new subscriber from the date of receipt of the order, unless the writer states specifically that he wishes such back numbers as can be furnished.

SPECIAL NOTICE TO INVENTORS.

The money receipts on account of patent business, which have heretofore been published in this column, and the notification of cases sent to the Patent Office, will for the present be discontinued. The receipt of specifications and money from inventors will be acknowledged promptly by mail.

RATES OF ADVERTISING.

TWENTY-FIVE CENTS per line for each and every insertion, payable in advance. To enable all to understand how to calculate the amount they must send when they wish advertisements published we will explain that eight words average one line. Engravings will not be admitted into our advertising columns, and, as heretofore, the publishers reserve to themselves the right to reject any advertisement they may deem objectionable.

CHIEF QUARTERMASTER'S OFFICE,
No 1139 Girard street, Philadelphia Depot, March 9, 1865.

PROPOSALS FOR LEATHER.—SEALED PROPOSALS will be received at this office till THURSDAY, March 23, 1865, at 12 o'clock M., for delivering at the Schuylkill Arsenal:—

Wax upper leather, best quality, oak tanned, from slaughter hides, well finished and stuffed, to weigh not less than six and three-quarte (6¾) ounces to the square foot.

Sole leather, best quality, oak tanned, from Buenos Ayres or La Plata hides, to weigh not less than fourteen (14) pounds per side.

Welt leather, best quality, oak tanned, slaughter leather, to average about sixteen (16) pounds (original weight). Each side to weigh not less than fourteen (14) nor more than twenty (20) pounds, to be taken at the finished weight. Sample to be seen at this office.

All leather to be subject to measurement, weight and inspection at the Arsenal.

Bidders are requested to submit samples of the leather they propose to furnish, which must be of suitable quality and substance for making army boots and bootees.

Each proposal must state when the deliveries will commence, the quantity to be delivered each week, the price (*which should be written both in words and figures*), and conform to the terms of the advertisement, *a copy of which should accompany each proposal.*

Bids will be opened on Thursday, March 23, at 12 o'clock M., and bidders are requested to be present.

The right is reserved to reject any bid deemed unreasonable, and no bid from a defaulting contractor will be received.

Each bid must be guaranteed by two responsible persons whose signatures must be appended to the guaranty, and certified to as being good and sufficient security for the amount involved, by some public functionary of the United States.

All proposals should be made out on the regular forms, which will be furnished on application at this office.

Indorse envelope "Proposal for (herestate the kind) Leather," and address

Col. WILLIAM W. MCKIM,
1 Chief Quartermaster, Philadelphia Depot.

CHIEF QUARTERMASTER'S OFFICE,
No. 1139 Girard street, Philadelphia Depot, March 15, 1865.

SEALED PROPOSALS will be received at this office till TUESDAY, March 28, 1865, at 12 o'clock M., for delivery at the Schuylkill Arsenal:—

¾ or 6-4 Blue Wool Flannel, indigo wool-dye, to weigh 5½ ounces to the yard, of ¾ width, for sack coats, Army Standard.
¾ Gray Twilled Flannel for Shirts, Army Standard.
Red, White, and Blue Bunting, Army Standard.
½-inch Yellow Silk Lace, Army Standa d.
½-inch Sky-blue Silk Lace. Army Standard.
½ inch Scarlet Lace, Army Standard.
W. Brown Thread, No. 35. Bidders to furnish sample.
Red Spool Cotton, No. 40. Bidders to furnish sample.
4-4 Black Silesia. Bidders to furnish sample.
Straw Wrapping Paper, 36x40, to weigh about 95 pounds per ream.

Parties offering goods should make separate proposals for each article offered, and must distinctly state in their bids when they will commence their deliveries, the quantity they propose to furnish each week, the price (*which should be written both in words and figures*), and conform to the terms of this advertisement, *a copy of which should accompany each proposal.*

Standard samples of the articles required may be seen at this office. Samples when submitted must be marked and numbered to correspond with the proposals; and the parties thereto must guarantee that the goods shall be in every respect equal to army standard, otherwise the proposals will not be considered.

Bids will be opened on Tuesday, March 28, 1865, at 12 o'clock M., and bidders are requested to be present.

Each bid must be guaranteed by two responsible persons, whose signatures must be appended to the guaranty, and certified to as being good and sufficient security for the amount involved, by some public functionary of the United States.

All proposals should be made out on the regular forms, which will be furnished on application at this office.

The right is reserved to reject any bid deemed unreasonable, and no bid from a defaulting contractor will be received.

Indorse envelope, "Proposals for (here insert the name of the article offered)," and address

Colonel WILLIAM W. MCKIM, Chief Quartermaster,
13 2t Philadelphia Depot.

PACKER'S PATENT ELECTRIC SOAP.—PREVIOUS to bringing this soap into market I thought it well to prepare the mind that something "new under the sun" has at last been discovered that will drive out of use many villainous compounds that destroy our clothes and injure the hands of the washerwomen; and it will be borne in mind the Electric Soap has neither salt, rosin, clay, ashes, soapstone, potash, or any other adulteration or substance that can shrink or injure the finest fabric, and yet, in the truest sense of the word, electric in removing grease, dirt, tobacco stains, printing ink, smoke, and the worst bilge-water stains, and imparting brilliancy to marble, glassware, plate jewelry, enameled paintings, paper and patent leather, immediately, and for cleaning floor tiles, has no equal, and yet again for the bath, and particularly for shampooing, the Electric Soap is a perfect luxury.

The parties about entering into the manufacture of the Electric Soap are among the most reliable in the city, sanguine and determined to give the public one of the purest, whitest and best soaps, and not the least of its many virtues will be its price, so that every body, and their neighbors, can test its superiority.

Prior to my application for a patent many competent judges put the Electric Soap to severe trials, and testified that it accomplished all I claimed, and considered it one of the most useful discoveries of the age.

Notice will be given in the leading papers, and otherwise, of the Electric Soap as soon as the company finish their works.

DANIEL F. PACKER,
(Care Loudback & Gilbert,)
1* No. 23 Park Row, N. Y.

ASSISTANT QUARTERMASTER'S OFFICE,
No. 451 EIGHTH AVENUE, NEW YORK, March 9, 1865.

CAVALRY AND ARTILLERY HORSES WANTED.—I will purchase in open market all horses that may be presented and pass inspection at the Government stables on Thirty-fifth street, near Tenth avenue, until further notice, as follows:—

Cavalry horses, 5 to 10 years old, 15 to 16 hands high.
Artillery horses, 6 to 10 years old, 15½ hands high, and over 1,100 pounds, and dark color.

Price for cavalry horses, $165. Price for artillery horses, $180. Payable in such funds as may be furnished by the Government.

1 L. L. MOORE, Capt. and A. Q. M.

STEAMSHIP OWNERS, ENGINE BUILDERS, MANUFACTURERS having engines of any description, will do well to examine Abbe's Universal Piston, with which any inexperienced person can expand the packing of cylinders 100 in. diameter in ten minutes. Patented June 7, 1864. Illustrated Vol. XI., No. 4, SCIENTIFIC AMERICAN. Send for circular. J. R. ABBE, Providence, R. I. 1*

WANTED—A SMALL SLIDE LATHE, TO SWING six or eight inches diameter; shears about four feet long. Any person having one to dispose of will please address box 1981, P. O., Buffalo, N. Y. 1*

ERICSSON'S CALORIC ENGINES,
Of greatly improved construction. For all light work a perfect motor. Safe, economical, durable.
Also Pumps of all kinds, Hoisting Gear, Steam Engines for Oil Wells, and Machinery of every description, at
ERICSSON'S CALORIC ENGINE AGENCY,
13 4* No. 164 Duane street, New York.

BOARD—$2 50 TO $3 PER DAY—AT DUPONT HOUSE, Hudson st., opposite St. John's Park, next street to Canal, and a few minutes' walk from Broadway. Also convenient to the California and Albany Steamers and Hudson River Railroad Depot. Night Porter in attendance 1*

IMPORTANT TO METAL WORKERS.—THE STANDARD Twist Drills sold by us cannot be made by individuals at anything like the price we sell them for. A trial will convince all. They are now used in the U. S. Navy Yard, and in the largest machine shops. All sizes from 1-32 to 1¼ inch; straight and taper shanks. Small sizes sent by mail. Also sockets to match.
Address MANHATTAN FIRE ARMS CO.,
13 3 Newark, N. J.

FRICTION MATCHES.—WANTED TO CORRESPOND with parties who manufacture hand and power machines for splitting match splints in the block—western style.
Address A. HENRY, care of Owens & Brophy,
1* Corner of University and Eleventh street, N. Y.

THE BUCKEYE HORSE MAKES LABOR LIGHT. Inclose stamp for Perpetual Almanac, with cut, price, etc. HERMAN B. HAMMON, Patentee and Manufacturer, Bristolville, Trumbull Co., Ohio. 1*

FOR SALE—A HOT-AIR ENGINE—ROPER'S PATENT—almost new, and in excellent order. Also five Grinding Mills and Frames for Glass Cutters' use. Address Box 149, Jersey City Post Office. 1*

SCOTCH GLASS TUBES, STEAM AND WATER GAGES FOR SALE. E. BROWN, No. 311 Walnut street, Philadelphia, Pa. 1*

WANTED—A SITUATION TO LEARN THE MACHINIST TRADE—the manufacture of steam engines preferred. Address F. L. STONE, Stoughton, Mass. 13 5*

FOR SALE—A WROUGHT-IRON SHAFT—BEST quality—hammered; whole length twenty and one-half feet; eleven and one-half inches diameter. Bearings (at each end) fourteen inches long, ten inches diameter, with pillar blocks and boxes.
PEASLEE & CARPENTER,
13 5* Copake Iron-works, N. Y.

SOLID EMERY WHEELS, SILICATE OR VULCANITE, of every size, promptly made or shipped from stock. N. Y. EMERY WHEEL CO., No. 94 Beekman street, New York. 13 4*

PARTNER WANTED—WITH ABOUT $10,000 CAPITAL, in a Machine and Machinists' Tool Shop, in Baltimore, doing a good business, and having full set of tools in very best condition. Object, to enlarge the business. Best of New York and Baltimore references given. Address S. H. JANNEY, Box 1476 Post Office, Baltimore, Md. 13

RECIPE FOR SAFETY MATCHES, WHICH ARE not equalled by anything yet made. Burn sure, without smoke or odor, and contain neither phosphorus nor sulphur. Will sell the recipe or join a company. A. W. SPRAGUE, Chemist,
13 2* No. 89 Washington street, Boston.

THOMAS & CO., PATTERN AND MODEL MAKERS and Machine Jobbers. Have Planer Centers for sale. Worcester, Mass. 13 2*

FAN BLOWERS.—DIMPFEL'S, ALDEN'S, POTTER'S and others, of all sizes, on hand, for sale, by LEACH BROTHERS, No. 86 Liberty street, New York. 13 8*

WANTED—CURIOSITIES OF NATURE AND ART. Address MUSEUM, 338 Fulton st., Brooklyn, N. Y. Give prices and full particulars or communications will not be noticed. 11 4*

FOR SALE.—ENGINES AND BOILERS OF ALL kinds on hand or furnished at the shortest notice; four gems for sawing marble, complete, for sale cheap. Stone cars and track iron on hand. Engines and Factories of all descriptions bought and sold. Call or address
DAVIS MACHINERY YARD,
11 3* Nos. 17 and 19 Morris street, Jersey City.

MALLEABLE CASTINGS, GREY IRON CASTINGS, Galvanized Castings of every description to order.
JAMES L. HAVEN & CO.,
10 10* Cincinnati, Ohio

2,000 BOLTS PER DAY CAN BE MADE ON our PATENT MACHINES. Also Rivets and Spikes of all kinds.
HARDAWAY & SONS,
St. Louis.
REFERENCES.
Chouteau, Harrison & Valle, Laclede Rolling Mill.
Collins and Holliday, Broadway Foundery.
Marshall & Co., Western Foundery.
John McCarty, Bogy Nail Mill. 10 4*

PARTIES IN AMERICA HAVING VALID LETTERS Patent for Great Britain, and wishing to dispose of the same, or negotiate for royalty, may address CHARLES POMEROY BUTTON, Nos. 142 and 143 Cheapside, London, England.
N. B. The object of this advertisement is to obtain control of a few meritorious inventions already patented in Great Britain, and no application from inventors will be entertained except their invention shall have been provisionally protected prior to the publication of the invention in America.
For references apply to any Mercantile Association or Trade Protective Society in Great Britain. 12 12*

WANTED—TO CORRESPOND WITH SOME PERSON or Manufacturer who has for sale or manufactures Rivet-making machines, which can be used to make rivets from 3-16ths to 3-8th inch. Address R. H. W, P. O. Box 132, Reading, Pa. 12 6*

BOILER CRUSTS REMOVED AND PREVENTED BY Winan's Incrustation Powder. Nine years in successful operation and without injurious effects. References everywhere.
12 3* H. N. WINANS, No. 11 Wall street.

$150 A MONTH MADE BY DISCHARGED SOLDIERS and others with Stencil Tools. Don't fail to send for our free catalogue, containing full particulars. Address
1:10* S. M. SPENCER, Brattleboro, Vt.

FOR SALE.—ONE ENGINE LATHE, 22 FT. BED, 30 in. swing; one Engine Lathe, 12 ft. bed, 24 in. swing; two Engine Lathes, 13 ft. bed, 20 in. swing; one Engine Lathe, 6 ft. bed, 16 in. swing; one Engine Lathe, 7 ft. bed, 19 in. swing—all first class, and complete with screw-cutting gears, etc.; one large Drill, back geared; one large and one small Drill, without back gears; also, two Iron Planers—plane 7 ft. by 24 in., and 5 ft. by 24 in.
WELLS CHASE & GEHRMANN,
12 2* No. 6 S. Howard street, Baltimore, Md.

WANTED.—A POWER PUNCH OF SUFFICIENT capacity to punch a hole one inch diameter through half-inch iron, either new or second hand. Address GEORGE MILBURN & CO., Michawaka, Ind. 12 4*

WANTED—A BOILER MAKER, TO START A Boiler Yard. To a good man will furnish capital and give half the profits. Address, with reference, O'FERRALL, DANIELS & CO., Piqua, Miami Co., Ohio. 12 2*

N. C. STILES'S PATENT POWER FOOT AND DROP PRESSES.—Dies of every description made to order. Send for a circular.
N. C. STILES & CO.,
12 8* West Meriden, Conn.

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THE CHEAPEST MODE OF INTRODUCING INVENTIONS.

INVENTORS AND CONSTRUCTORS OF NEW AND useful Contrivances or Machines, whatever kind, can have their inventions illustrated and described in the columns of the SCIENTIFIC AMERICAN on payment of a reasonable charge for the engraving.

No charge is made for the publication, and the cuts are furnished to the party for whom they are executed as soon as they have been used. We wish it understood, however, that no second-hand or poor engravings, such as patentees often get executed by inexperienced artists for printing circulars and handbills from, can be admitted into these pages. We also reserve the right to accept or reject such subjects as are presented for publication. It is not our desire to receive orders for engraving and publishing any but good Inventions or Machines, and such as do not meet our approbation in this respect, we shall decline to publish.

For further particulars address—

MUNN & CO.,
Publishers of the SCIENTIFIC AMERICAN.
No. 37 Park Row, New York City

PEARSON CROSBY'S PATENTS
FOR THE
MANUFACTURE OF LUMBER OF ALL KINDS.

By means of these improvements lumber can be manufactured better, cheaper, and a great saving in material, as set forth in the following certificates.

The subscriber has been engaged in the manufacturing of lumber for the past twenty years. For the last ten years he has manufactured ten million feet annually.

"In the winter of 1863 and 1864, Mr. P. Crosby, of New York, applied to us to have us test his improved method of dressing and stretching saws, alleging that he could manufacture lumber in a superior manner, at a less expense, and a saving of 8 per cent. We expressed much doubt, as we thought we were manufacturing our lumber as well and as economically as it could be done. But finally consented to try the experiment.

"Mr. Crosby, in the spring of 1864, came to our mills, and put one gate in operation. We were so much pleased with it that we put three more gates in operation, at Phelp's Mills, and ordered the saws for five gates at the Dodge Mills. After eight months trial of the saws at Phelp's Mills. I can only say that we are in the same number of hours, manufacturing ten per cent more lumber, doing it in a superior manner, and at less cost per 1,000 feet, with a saving of 6 per cent in lumber, than we did previous to adopting Mr. Crosby's Patent Stretchers and method of dressing saws.

"Signed, E. B. CAMPBELL.

"Phelp's Mills, Lycoming Co., Pa., Jan. 10, 1865."

"NEW YORK, January 20, 1865.

"We fully confirm the opinion of our Agent, Mr. E. B. Campbell, having every confidence in his judgment in everything connected with the manufacturing of lumber. He has been very careful in not over-estimating the advantages of Mr. Crosby's plan of thin saws. Our impression is, that in sawing inch boards, our usual saving is about equal to one board in eleven, or, rather, that the eleventh board is clear gain. The single or span saws are also calculated to make an equal saving.

"Signed, WM. E. DODGE, for self and partners."

Proprietors of Mills, who wish to consult or order these improvements, will address the subscriber, PEARSON CROSBY,
11 3 77 Johnson street, Brooklyn, L. I., N. Y., or Box 162 P. O.

LUNKENHEIMER'S IMPROVED GLOBE VALVE; A complete assortment of Brass Work for Locomotives, Portable and Stationary Engines. For samples and catalogue address
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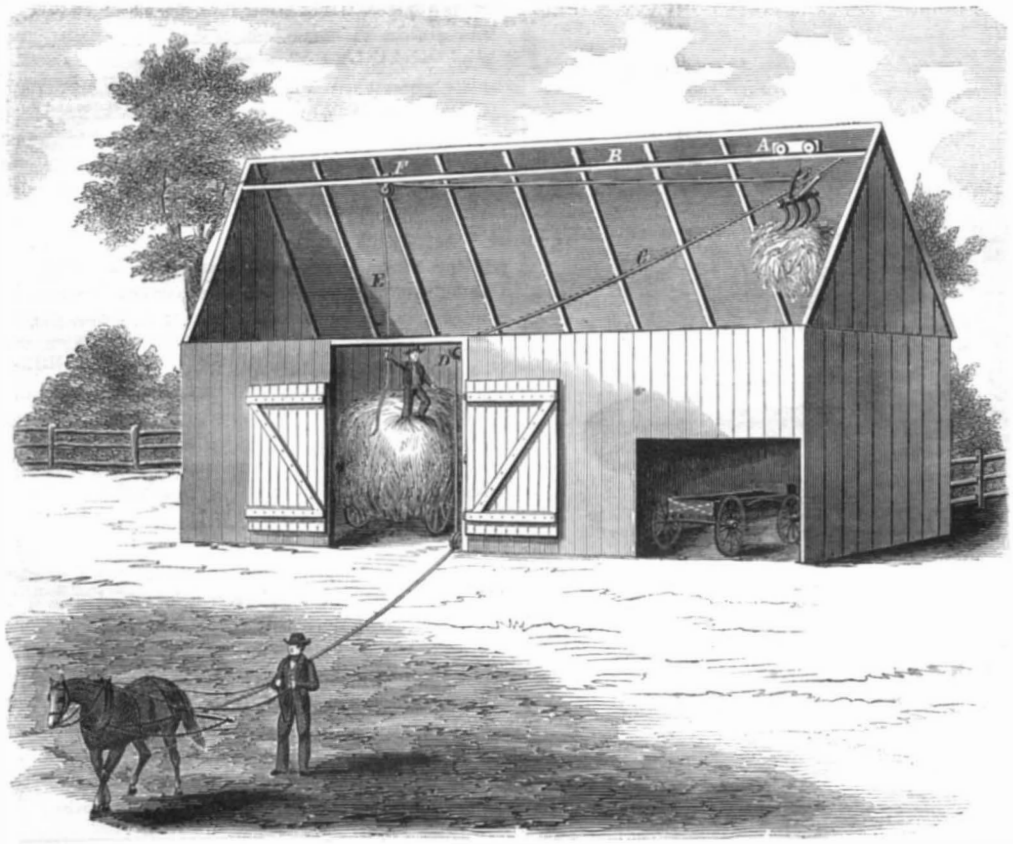
Improved Mode of Storing Hay.

This engraving represents a new system for storing hay which has many advantages over the old method. It is more expeditious, is always in place ready for use, and does not occupy any room available for other purposes. It is easily operated by one horse, and does not require the erecting of any derricks, booms or other fixtures. All the details can easily be made by farmers themselves, excepting the pulleys, which are readily obtained in all stores. The object is to unload and carry the hay at one operation to any desired point. To effect this the inventor provides a car, A, running on a wooden track, B, said track being secured to the timbers of the barn. The



HINMAN'S ARRANGEMENT FOR STORING HAY.

hay fork is suspended from this car and so arranged as to be easily lowered and elevated. A rope, C, runs over pulleys, D, fixed at suitable points, and the team draws the car along the track. When it arrives at the proper point the man on the load trips the fork with the line, E, and drops the hay wherever he chooses. There is a slight inclination in the track so that the car returns of itself.

This obviates the necessity of waiting for a team to back up, for the car draws the slack of the rope up itself, and the horse can turn and walk to his place. The saving in time by this peculiar feature amounts to considerable in haying season when large wages are paid. The stop, F, can be set at any point and wherever the car hits it the fork descends, either over the "mow" or any other desired point.

This is a simple and easy working arrangement for the purpose, and is not liable to derangement. It is the invention of N. D. Hinman, of Pleasant Vale, Conn., and was patented through the Scientific American Patent Agency on the 29th of November, 1864. For further information address him as above.

Healing Power in Various Nations.

The great vital energy of savage, compared with civilized nations, is shown by the relatively greater healing power of nature possessed by the former. The experiments made in this respect extend to all races. Leigh mentions the case of an Australian, whose temporal bone had been fractured by a blow, and the temporal artery divided, and of another whose ulna and radius had been fractured in a terrible manner, that the first took part on the following day in some public meeting; and that, though worms appeared in the arm of the second, the recovery in both took place without any operation, or even dressing. Similar cases are to be found in Barrington and Dawson. Though but one in four recovers from the operations of extirpation of the genital organs which are performed on negroes, by the slave-dealers in East Sudan, many examples prove that nature's healing power is as great here as among other negroes. This extends also to the white races living in Africa; although Russegger points out that in the hot climate of tropical Africa, wounds heal very slowly in the European, especially during the rainy period. Others, however, maintain that in the tropics, *e. g.*, at Trinidad, wounds heal rapidly, even in Europeans. W. Earl ascribes the natural healing power among the Malays to their vegetable diet, which prevents violent inflammation. Petit reports a series of his own observations in Abyssinia, that those who are punished by having hands or feet cut off, as well as the children or adults who are emasculated, or have the whole genitals extirpated, do not generally die from the operation, although the wounds are entirely left to the healing power of nature. Parkyns relates similar instances. To the Moors, Cheniers ascribes that great innate healing power and insensibility to pain, which has been so often attributed to the native Americans.

"A 1"

The expression "A 1," applied popularly to everything of the first quality, is copied from the symbols of the British and Foreign shipping list of the Lloyds, A, designates the character of the hull of the vessel; the figure 1, the efficient state of her anchors, cables and stores; when these are insufficient, in quantity or in quality, the figure 2 is used. The character A is assigned to a new ship for a certain number of years, varying from four to twelve, according to the material and mode of building, but on condition of the vessel being statedly surveyed, to see that the efficiency is maintained. When a vessel had passed the age for the character A, but is still found fit for conveying perishable goods to all parts of the world, it is registered Æasterisk in red. Ships Æ in black form the third class, and consist of such as are still found, on survey, fit to carry perishable goods on shorter voyages. Classes E and I comprise ships sufficient to convey goods not liable to sea damage; the one class for voyages of any length, the other for shorter voyages.

How to catch Curculios.

Mrs H. Weir, of Johnsonville, New York, writes to the *Rural New Yorker* as follows:--

"In May last, we had occasion to use some lumber. It was laid down in the vicinity of the plum yard, and on taking up a piece of it one cold morning, we discovered a number of curculios huddled together on the under side. On examining other boards we found more, so we spread it out to see if we could catch more, and we continued to find more or less every day for two weeks. We caught in all one hundred and sixty-one. So I think if people would take a little pains they might destroy a great many such pests. These were caught before the plum trees were in flower. What is most singular is, that we never found a curculio on a piece of old lumber, although we put several pieces down to try them. They seemed to come out of the ground, as we could find them several times a day by turning over the boards."

BOILERS UNDER THE ENGLISH HOUSE OF PARLIAMENT.—It is said, by an English paper, that there are twenty steam boilers under the floor of the House of Parliament, many working at high pressure and not tested as to their strength for years. It might create a deal of excitement, if some morning the reports of parliamentary proceedings in the papers were to wind up suddenly with, "Here the debate came to an end by the blowing up of all the members. A new ministry and opposition, with the requisite number of members to work both, will be inmediately required."

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